December 2000
Volume 68 No 12

Amateur Radio

WIRELESS INSTITUTE OF AUSTRALIA

Novice Notes:

The crystal set: an ideal holiday project

MATHS
for Amateur Radio

Phased Verticals for 10m Mobile Use

Fun with a 'Cool Little Mast' and a Pulsar

Gil Sones VK3AUI
Technical Abstracts

Lloyd Butler VK5BR
Antenna Noise and Signal Cancelling at LF

Drew Diamond VK3XU
From Circuit to Chassis

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Our cover this month

The peak of solar sunspot cycle 23 is predicted to occur this month. The cover shows a very active sun photographed with H alpha filter. Inset is a photograph of the Learmonth Observatory (Courtesy of the Ionospheric Prediction Service), part of the network which takes daily observations

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Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

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Back issues are available directly from the WIA Federal Office (until stocks are exhausted, at $4.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest
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Founded 1910

Representing
The Australian Amateur Radio Service

Member of the
International Amateur Radio Union

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Editor's Comment

Colwyn Low VK5UE

End of Year One

Well this is the end of my 12th issue of AR. It has had its ups and downs. We have assembled a few very good issues and fortunately no really bad ones. However we have had our moments when articles did not get presented as the authors would have liked and we apologise for that. We have omitted to print a submitted column once or twice and we are doubly sorry for that because the volunteers who write the columns give up a lot of their time to assemble and write the column each month. On behalf of the production team I wish to thank all those who write columns monthly for AR, all those who have taken the time to write articles for AR and those of you who have written to *Over to You*. The magazine is the house journal of the Wireless Institute of Australia and can only continue while members support it. Please continue to contribute. Please write an article once in a while. Please use OTU to let us all know how you feel.

As you can see in the Presidents Notes and the letter from the ACA the Federal WIA is continuously working to protect our stake in the Radio Spectrum. Without the WIA where would we be? I do not see the knockers banding together to produce a competitor, so the WIA has to work for all Amateurs. Let us all thank those in Federal positions and on Federal Committees for their dedication to Amateur Radio. Special thanks are also due to the State Divisions and the Clubs that bind us together.

I had several replies to my request for bearing distance programs. Getting them into a Basic compatible machine here is proving difficult. No compatible drives ! This issue contains a Spreadsheet form of Great Circle bearing and distance calculation. This may be more readily usable these days. Thanks to all those who sent me programs.

I wish you all a Merry Christmas and a Happy New Year. May you enjoy your hobby more in 2001 and every now and again ask "What can I do for Amateur Radio and the WIA?" not "What can the WIA do for me?"

Now just to keep you posted I did get out in the Spring UHF/VHF Field Day and I have got my 1.2GHz transverter built. The transverter component boards all worked first time so I'm now putting it in a box. So thanks to Mark Kilmier VK5EME of Mini-Kits, http://homepages.picknowl.com.au/vk5eme/minikits/index.html for a very good kit and to David Minchin VK5KK for helping me check the finished transverter.

NEW WIA MEMBERS

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of October 2000

G4DFV	MR D J WALTERS	VK3DBD	MR D DUNN
L31556	MR S POGATSCHER	VK3HDF	MR A SCAMMELL
VK1TRT	MR T O N ROULSTON	VK3KAY	MR D KAY
VK2EDE	MR W LAKE	VK3RB	MR T MORRISON
VK2JLX	MR P DUDLEY	VK6HGR	MR G ROGERS

Silent key

The WIA regrets to announce the recent passing of:-
M (Malcolm) CREW VK3BBU

WIA Comment

Peter Naish
WIA Federal President.

I would like to clarify the situation regarding the proposed changes to the 70 cms. band. There appears to have been some misunderstanding of what is taking place. In the Perth area the ACA has allocated a significant part of 420–430 MHz to the land- mobile service as co-primary with the Department of Defence. Consequently this sub-band will be withdrawn from the amateur radio service very soon in the Perth area. Although there are no immediate plans for similar land-mobile services elsewhere, the ACA expect that such services will be needed in the not too distant future and thus have advised the WIA that 420-430 MHz may be withdrawn from the amateur radio service nationally before long.

There is no threat to the 430-440 MHz sub-band which is allocated to radio amateurs in the ITU Region-3 band plan as secondary users. Also, the higher sub-band, 440-450 MHz is likely to remain available in Australia to the amateur radio service for some while yet.

With the above in mind the WIA has reviewed the 70 cms national band plan to permit the various amateur radio services now operating in the full 30 MHz (420-450 MHz) to be accommodated in a 20 MHz band (430 to 450 MHz). The opportunity has also been taken in the revised plan to avoid the Class Licence area around 430 MHz where the LIPD's are operating. This WIA band-plan is still in a draft form but it is expected that a final version will be ready for deployment in time to meet the closure of the 420-430 MHz sub-band. A feature of the new plan will be to minimize where possible the changes needed to fixed links and repeaters. However, it is inevitable that some changes will be necessary.

A full description of the new band plan and the reasons behind it will be available just as soon as agreement on it has been reached by the various users and organisations concerned. The future of 70 cms. is assured albeit with a narrower overall band.

May I on behalf of the WIA wish you all a Happy Christmas and Good Wishes for the New Year.

Letter from Australian Communications Authority

to Mr Peter Naish, President, Wireless Institute of Australia

AUSTRALIAN BROADCASTING AUTHORITY DROP-THROUGH FOR UHF TELEVISION CHANNEL 35 (575 - 582 MHz)

The Australian Communications Authority, (ACA) has recently received advice from the Australian Broadcasting Authority, (ABA) about the extension of the drop-through for UHF television channel 35 beyond 31 December 2000.

Under section 34 of the *Broadcasting Services Act 1992*, the ABA has decided that the drop-through for channel 35 at the existing four sites may continue until certain dates in 2001. This decision was made on the condition that licensees accept possible interference from digital television and/or datacasting transmissions. The four sites and their associated drop-through dates are:

LOCATION	UNTIL
Lawson (New South Wales)	30 June 2001 (midnight)
Lane Cove (New South Wales)	30 June 2001 (midnight)
O'Halloran Hill (South Australia)	31 December 2001 (midnight)
Spring Hill (Queensland)	31 December 2001 (midnight)

In addition, all services must operate wholly within the band 575 - 582 MHz (UHF channel 35). The ABA has advised that it will write to each Amateur licensee to advise him or her about the ABA decision.

Yours sincerely
Alan Jordan
Manager, Radiocommunications Licensing Policy Team
27 November 2000

FEDERAL CONTEST CO-ORDINATOR

Job Specification

Applicants for the position of Federal Contest Co-ordinator are asked to consider the following guidlines —

1. To report frequently to the member of the Federal Executive appointed to oversee Contest activity and to keep him fully informed, especially of budgetary costs;
2. to liaise frequently with the Federal Office;
3. to write an Annual Report in February each year for presentation at the WIA's Annual General Meeting;
4. to liaise closely with the NZART Contest Co-ordinator;
5. to liaise closely with other Contest Co-ordinators and Managers, both in Oceania and world wide;
6. to produce a monthly information column in "Amateur Radio";
7. to organise for production and forwarding of trophies at various times each year as appropriate;
8. to keep accurate records of trophy winners and to arrange for engraving of Perpetual Trophies;
9. to oversee the supplies of available certificates and to organise replacements when necessary;
10. to write and post certificates on behalf of individual Contest Managers;
11. to arrange a speaker for the annual Remembrance Day Contest and to produce and distribute tapes of the speech for each Division;
12. to be available via telephone, postal mail and e-mail.

Applications to WIA Federal C/o the Federal Office.

Happy Christmas and a Prosperous New Year to all Amateur Radio readers!

Antenna Noise and Signal Cancelling at LF

Lloyd Butler VK5BR

By using the signals from two antennas, controlling their relative amplitudes and controlling the phase of one of them, unwanted signal or unwanted noise can be phased out. Circuitry is described which uses the signal from a wire antenna to provide selective cancelling against the signal output from an LF loop antenna.

Introduction

The fact that the phasing between a wanted signal and an unwanted signal can be different on different antennas is put to advantage. With this condition, the unwanted signal can be cancelled out by controlling amplitude and phase. The heart of the system is some form of phase control circuitry. I described methods for doing this at HF in AR Sept. 1992 (ref. 1) and AR Jan. 1993 (ref. 2). The second system made use of the 180 degree phase shift which was achieved when two lightly coupled tuned circuits were tuned from one side of resonance to the other by a ganged pair of variable capacitors. It is this system which is again used at LF.

The circuit described provides a phase and amplitude controlled auxiliary signal from a wire antenna. Whilst its output could be used to mix with some other antenna system, it was specifically aimed at mixing in with the signal from the loop antenna in the active loop converter described in AR Jul 2000 (ref. 3).

Circuit Detail

The circuit diagram is shown in figure 1. The auxiliary wire antenna is coupled into the phase control network L1-L2-L3-C1A-C1B via R10. The network is made up of two tuned circuits C1A-L1 and C1B-L2 coupled via inductor L3. The three inductors are miniature chokes obtainable from electronics stores. C1A and C1B with maximum capacities of 450pf are ganged. Using the component values shown, the circuit is tuneable over the range of 160 to 500 kHz. A phase control range of 180 degrees is achieved tuning from one side of resonance to the other with an amplitude variation not greater than 6db.

The phase control network is interfaced with amplifier V1A which is one half of an LM353 twin mosfet op. amp package. The circuit constants are set for a gain around 25. The other half, V1B, is connected as a phase inverter to provide the second half of the 360 degrees phase range. Switch S1 provides selection of one or the other ranges of 180 degrees.

The amplifiers operate from 12V DC picked up from the loop converter supply. Their operating points are set by 6V derived from R8 and R9.

The output from the auxiliary circuit is mixed in with the output from the loop converter interface amplifier at the NE602 mixer input, pin1. As there is a second input to the NE602 (pin2), I could have fed the auxiliary signal via this second pin. However, I would have had to disconnect the converter circuit board card, remove it from its mounting and modify the board. I found it easier to add circuitry around the loop gain control RV2, as shown in the top right hand corner of figure 1, so that both signals are fed to pin 1.

There is nothing specific about requirements for the auxiliary antenna. The normal radio shack antenna used for HF communications can be connected for this purpose.

Operation

A little bit of practice is needed to set up the system on a station tuned in.

First of all set the auxiliary antenna gain control RV1 to zero and loop gain control RV2 in the converter well advanced or at maximum. Adjust the loop tuning for resonance indicated by maximum signal.

Now set the loop gain control RV2 to zero and advance the auxiliary gain control RV1. Adjust C1 in the phasing circuit for resonance indicated by maximum signal.

Restore loop gain control RV2 to its previous position so that signals from both antenna are feeding the mixer. Assuming there is unwanted noise or signal, carefully 'fiddle' with the tuning of C1 either side of resonance and the setting of auxiliary gain RV1 to find a null in the unwanted noise or signal. If there is no success, reverse phase with switch S1 and try again.

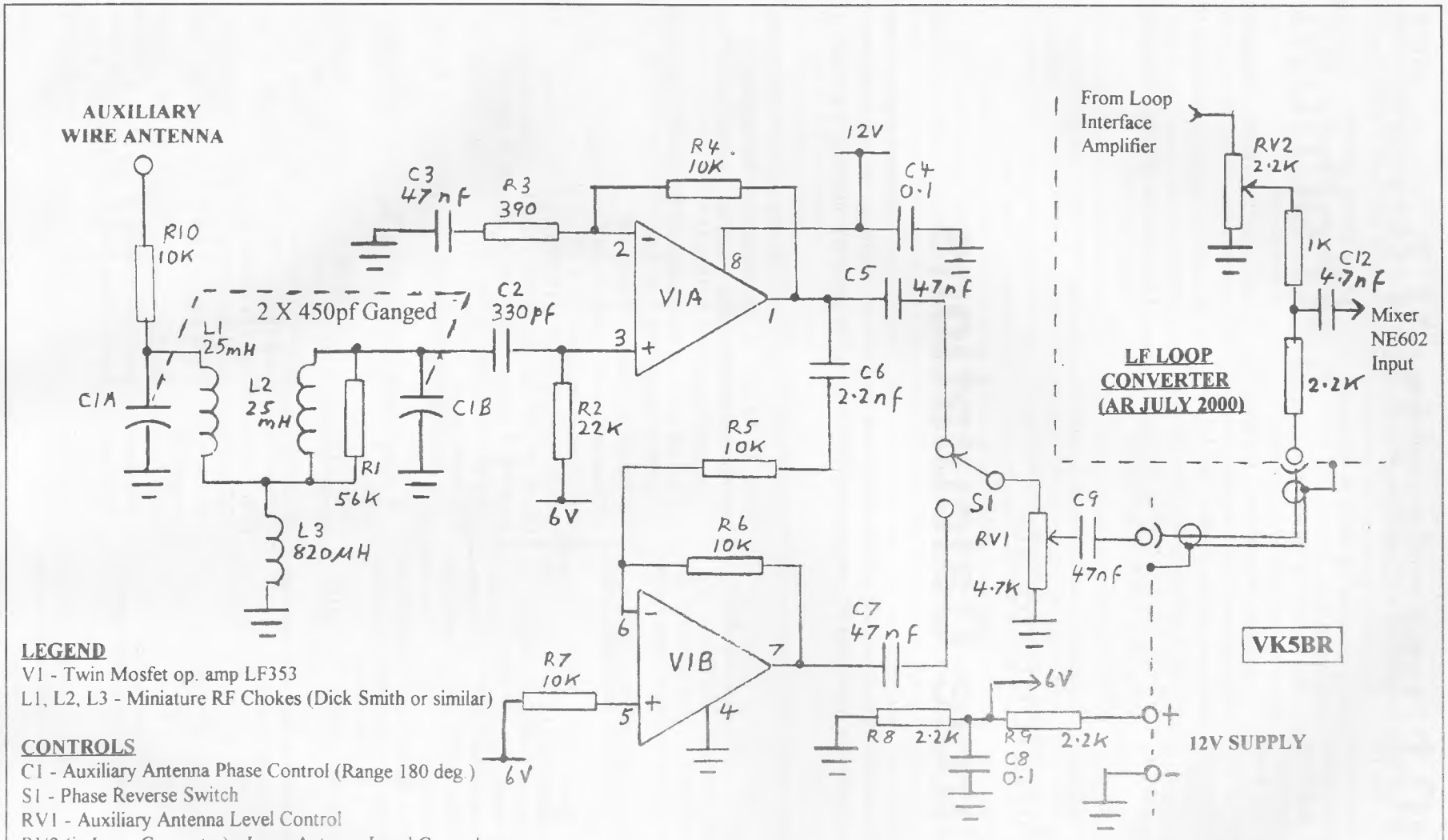
For the cancellation to work, the unwanted noise or signal from the auxiliary circuit must be at least equal in level to that from the loop circuit. If this is not the case, it might be necessary to reduce the loop level (RV2) to achieve this condition.

Performance

Whilst the main purpose in setting up the cancelling circuit was to phase out locally generated noise, it has also proved to be useful in separating signals. There are a multitude of aeronautical NDB signals to be heard above 200 kHz and many of these stations are on the same frequency or very close in frequency. Tune across the band and at many tuned positions more than one station ident. can be heard.

Assuming the signals are from different directions, one way to separate one station from another is to carefully set the loop null in the direction of the signal to be rejected. However, independent of the loop position, the cancelling circuit is also very effective in phasing out the unwanted signal. It is interesting to phase out one or the other of two signals so that each can be heard on its own, one at a time.

If there is no signal or noise to be cancelled, another interesting aspect of having two different types of antenna is that either can be selected to operate in its own right. If the signal from the loop seems better than that from the wire antenna , just set RV1 to shut off the auxiliary signal. If the signal from the wire antenna seems better, set RV2 to shut off the loop.



LEGEND

V1 - Twin Mosfet op. amp LF353

L1, L2, L3 - Miniature RF Chokes (Dick Smith or similar)

CONTROLS

C1 - Auxiliary Antenna Phase Control (Range 180 deg.)

S1 - Phase Reverse Switch

RV1 - Auxiliary Antenna Level Control

RV2 (in Loop Converter) - Loop Antenna Level Control

FIGURE 1

LF Noise Cancelling Circuit

Frequency Range - 160 to 500 kHz

Summary

The LF Noise & Signalling Cancelling circuit is a useful addition to the LF receiving system where localised noise is a problem. It is also useful to phase out an unwanted signal near the frequency of the signal being received.

As described, the circuit has been designed to operate in conjunction with the LF Active Loop Converter described in AR, July 2000. In the combined arrangement, the following is achieved:

The advantage of the loop with its properties of directivity and insensitivity to the high level electric component of localised noise.

The ability to raise the Q of the loop by feedback and limit its bandwidth.

The ability to phase out unwanted noise or signal by using an additional antenna pick-up.

The ability to select loop or wire antennas for best signal condition.

Using components shown in Figure 1, the phase control circuit works over the frequency range of 160 to 500 kHz. No attempt has been made to operate below 160 kHz but this might be achieved by using large values of inductance in the circuit.

References

1. *An Interference Cancelling System for your Receiver or Transceiver* - Lloyd Butler VK5BR - Amateur Radio, September 1992.
2. *More on Interference Cancelling and a New Circuit* - Lloyd Butler VK5BR - Amateur Radio, January 1993.
3. *An Active Loop Converter for the LF Bands* Lloyd Butler VK5BR - Amateur Radio, July 2000

Maths For Amateur Radio

Great Circle Calculations

Lindsay Lawless VK3ANJ

Calculating great circle distance and bearings using a Microsoft Works spreadsheet might not be as convenient to use as a programmed calculator or dedicated PC programme, but if neither of those are available it is a useful alternative.

There are several equations available for the purpose; I find the following most useful:

Distance D = 60 acos [sinL1sinL2 + cosL1cosL2cos ($l1$-$l2$)] (1)

Bearing H = acos[(sinL2 -sinL1cos (D/60)] /sin(D/60)cos L1 (2)

For spreadsheet calculations we can enter latitudes and longitude across the sheet and do the necessary conversions to radians in the rows below.

The formulae for final calculations can be entered below the conversions to radians.

So proceed as follows :-

L1 = latitude of position 1 entered in 'a1'

L2= latitude of position 2 entered in 'b1'

$l1$ = longitude of position 1 entered in 'c1'

$l2$ = longitude of position 2 entered in 'd1'

D = distance in nautical miles and H = true bearing in degrees

For spreadsheet calculations latitude and longitude in degrees minutes and seconds must be converted to radians using

[degrees + (minutes x 60 + seconds)/ 3600] x Pi/180 (3)

to get 'a2', 'b2', 'c2', 'd2'

Equation (1) converted to spreadsheet language becomes :

D = 'a3' = (60*180/Pi())*acos (sin(a2)*sin(b2) +cos(a2)*cos(b2)*cos(d2-c2)) (4)

and equation (2) becomes;

H = 'a5' = (57.3)* acos((sin(b2)-sin(a2)*cos(a4))/ (sin(a4)*cos(a2)) (5)

'a4' =(a2/60)*Pi()/180 (5a)

where a2, b2 etc are the cells containing the radian values of the latitudes and longitudes

Notes

(1) South latitudes and East longitude must be entered as negative quantities

(2) If H = a4 is negative add 360 deg. to obtain true bearing

(3) a1, b1, b2...etc are the column, row designators.

(4) The expressions 1,2,4& 5 will not compute along lines of equal longitude i.e. if l1 = l2.

(5) Do not use co-ordinates located at opposite sides of the earth (ie antipodes)

(6) Do not use latitudes +90 or –90.

Those readers who prefer to use a calculator, equations 1 & 2 can be entered direct in a HP 32 S or as programmed operations in the HP 32 and the HP 11 C. I have equation 1 as LBL A in a HP 11C and use the result to program equation 2 at LBL B. I also use LBL C for a program to determine the Latitude crossing point of the GC path at a given Longitude. That equation is:

Li = atan{[tan L2 sin (li-$l1$)- tan L1 sin (sinli - $l2$)] /sin ($l2$ - $l1$)} (6)

Li is the intermediate latitude and li the intermediate longitude.

The equations are derived from spherical trig. identities, there is a good introduction to that subject and its use in terrestrial and celestial navigation in "Mathematics for the Millions" by Lancelot Hogben. The ITT "Reference Data for Radio Engineers" also has useful information.

Calculating the bearing and distance of Perth from London and the bearing of London from Perth is a useful test of the calculations.

The distance is 7812.49 nautical miles (130.21 degrees).

The bearing of Perth from London is 92.9 degrees.

The bearing of London from Perth is 313 degrees.

ar

Phased Verticals for 10m Mobile Use

Kim Rhodes VK6TQ

Band conditions OK, but solar cycle 23 not all that great and the DX from the car more difficult than expected. Big signal difference between the home antenna (4 element quad) compared to jumping in the car and going mobile. I seem to be the kids' taxi late afternoon, which is the time 10meters is usually open to Europe. I decided to see if I could do something to improve operating 10meters mobile.

I have been operating for some time with a 2 metre tall whip on the front of the car which is top loaded to be a 1/4 wave on 10 metres. I then put a second shorter whip on the roof rack to see how it compared to the one on the roo bar. It seems the height gain of the roof compensates for the shorter antenna OK but no real lift over the front antenna. Both performed about the same with slightly different direction lobes from the car.

However still being the ever busy kids taxi I was not satisfied with the operation of 10 metres mobile. I also work daily to YJ8WR (ex VK6JR) from VK6. Wayne's reports over this distance served as a good yard stick for the antenna tests.

I had been pondering phasing the two antennas together for a while. A measure up and slight moving of the roof rack allowed me to space the two mobile whips 1/4 wave apart. A change of coax to put equal length feed line to both the antennas and arbitrarily choosing to make the feed lines a multiple 1/4 wave in coax for 10 metres.

A small metal box with two cheap relays glued in with the pins facing up. A couple of PL259 chassis mount connectors, 1/4 wave of RG-58, 2 X 1/4 wave of some small 75 ohm coax and a small switch to place near the transceiver to remote control the relays.

By using a centre off type toggle switch to drive the relays it is possible to parallel both antennas (giving a gain of about 3bdB to the sides of the car) switch forward or reverse with a gain of about 6dB in the selected direction. It may not sound like much but it is equivalent to bumping up to 400 watts from 100 watts and adds the same to the bloke you are listening to. In many instances it also reduces near by QRN further improving the received signal readability.

I used RG-58 for the 1/4 section for direction change and a small diametre 75 ohm cable (which I do not have a number for) on the impedance raising 1/4 wave sections. RG-59 would be fine for the 75 ohm sections and a BNC 'T' piece could be used as the joiner at the transceiver feed point. A 1/4 wave in coax for this project was 1700mm and the antenna spacing on the car was 2600mm. The relays were small 12DC from a local component store.

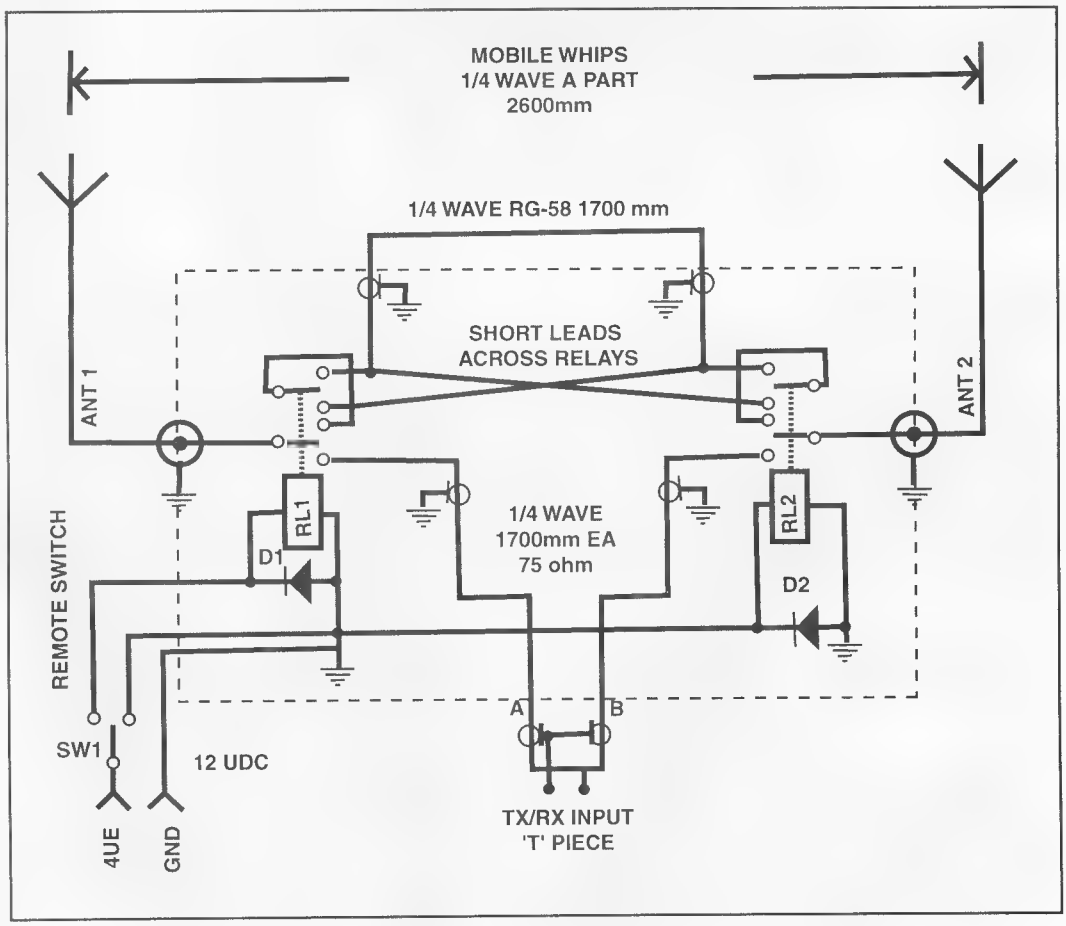


Figure 1

Fun with a 'Cool Little Mast' and a Pulsar

VHF/UHF Spring Field Day 2000

Andrew Scott VK2TWO-QF56OD
ascott@bigpond.net.au

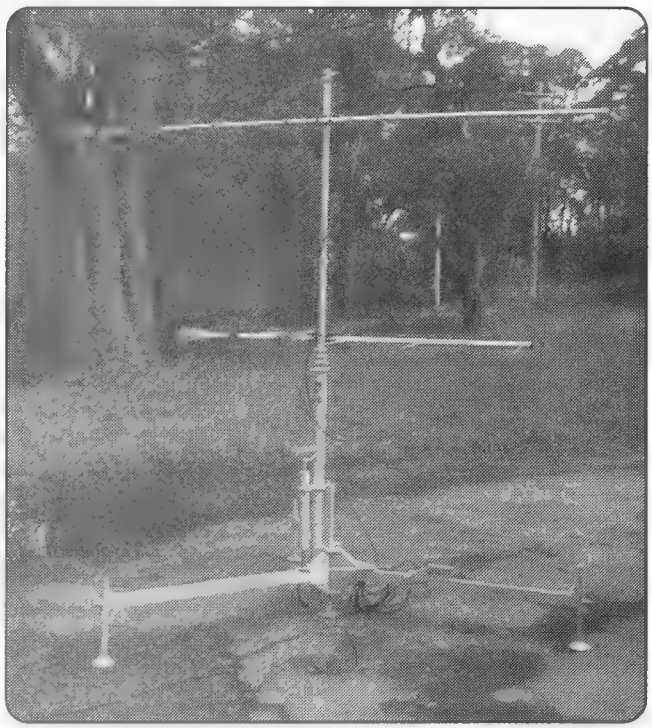


Photo 1

I'm not the most organised person in the world, and this Field Day proved that theory. I had organised to borrow the Super mast from work and had collected some lengths of Coax and assorted odds and ends. I then was faced with the challenge of finding some Antennas.

I don't own any horizontal antennas and went about asking people at the local Radio Club. (Manly Waringah Radio Society) I managed to borrow a 5 element Hygain 2m FM beam and a 15 element home made 70cm FM beam. I wish to thank Dom VK2JNA and Tim VK2ETJ for letting me function test their beams, they worked well.

Now neither of the antennas was ideal, but better than a vertical on the car. So I collected these antennas in preparation. This is where I ran into my first problem. I have a Nissan Pulsar. A 15 element 70cm beam is not small. Thus some of the antenna had to stick out the window of the car for the trip. This did not pose a problem, as even though it was raining for part of my trip, I didn't seem to have any water leaking issues.

So I had collected all the assorted bits and pieces. I required a trip to DSE to purchase an N-SO239 adapter and I was ready to "play radio". I'm not a VK2 local. I have been here for 14 months now but still haven't done much travelling. So where should I go? Requirement was a good view into Sydney and not too far. I asked around and was told Bilpin was as good a location, as any, so I headed off into the surrounding areas of Sydney.

One thing you learn very quickly about Sydney is that the maps are terrible. UDB don't even include Lat/Long references on their pages. I didn't really have a good map. Oh well, I sort of knew where it was. Dom said I should drive about 4km past Bilpin and there is a turn off to the right that's about 8km to a good mountain. So I passed the Bilpin sign, found a road to the right that looked okay, (it seemed to lead to a mountain). So down this road I went.

Photo 2

Bitumen turned to gravel so I kept going. Gravel road turned to fire track, but I kept going. It was a mountain. But the road missed the top and the GPS only said 500m ASL. So I turned around and went looking for something better. I ended up at Mt Tomah QF56el at 1006m ASL. This was a good path back into Sydney, about 100km. I worked a number of stations, some on FM.

Photo 1 is the "Cool Little Mast", self supporting, 6.5m high. It has a pump to erect it. Each section locks into place once raised, It also has the option to guy it. Setup with antennas installed is around ten minutes. The ideal portable station. Thanks to work for letting me borrow it.

This is the Mt Tomah Location. QF56el. The path wasn't the best. But it worked. East (Sydney) was between the trees. I also had a good path west towards Bathurst.

The 6m Antenna used was a Terlin Outbacker Perth Plus. This antenna is my station HF antenna. It works okay. Though wasn't enough for a 175km 6m contact. I'm in the process of obtaining a small 6m beam.

My operating station is an Icom IC706G, do-everything radio so this comprised my portable station. This is shown in photo 2 with my Laptop that is used for logging and a GPS. I have the radio installed as a remote unit in the car. I was able to sit the head unit on the roof and operate it this was as seen in the Picture. It worked very well.

I had only worked a handful of stations and was having fun, but my calls from Mt Tomah went unanswered. I looked at the map and decided to go for a drive. If you operate in another Grid Square there are extra points offered. So I headed for Bathurst. I ended up at this mountain (QF49xm at 1306m ASL). I'm not sure but I think it is Mt Conobolous. It was around 150km from Sydney It had a 360 degree view and I had good paths back to Sydney and also to Young. This is a very good spot to remember. I will be using this spot again for future field days.

Again setting up was a breeze. There are a number of commercial applications on this site. But I did not suffer desensing or any major interference.

As the sun started to set, the clouds drew closer. They had covered the mountain by the time I had packed up. Photo 3 shows the site to the left is the survey marker.

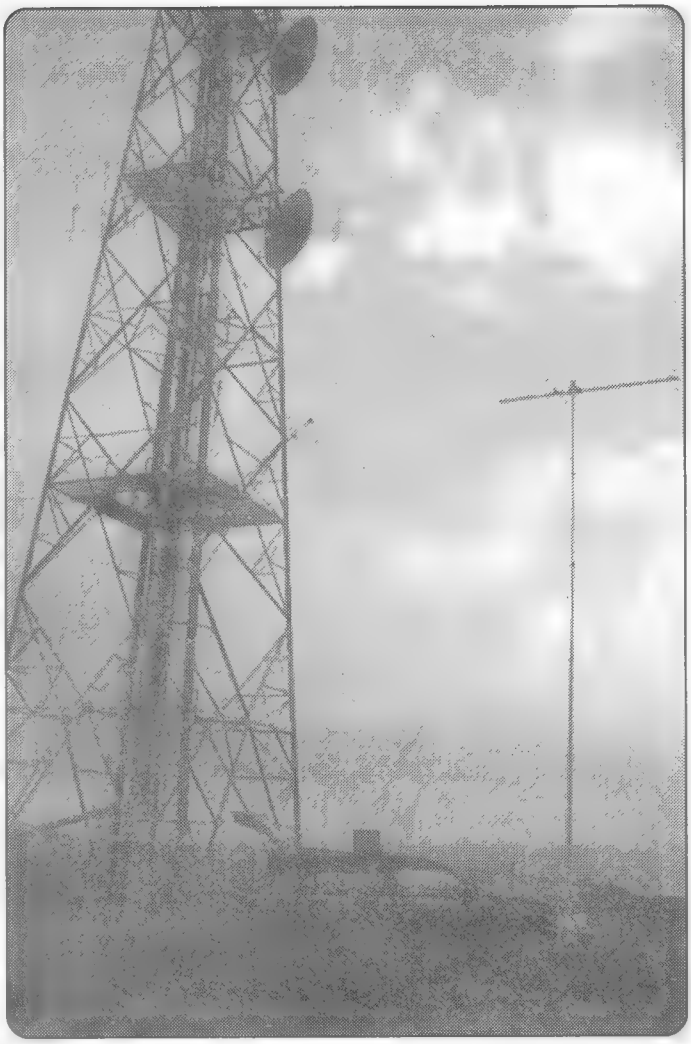


Photo 3

In the end I believe the trip was successful. I didn't work that many stations. I drove nearly 500km and had a ball. It was great to prove that the setup works and learn some tricks to make my next effort much more successful. It was a very good performing setup. Contacts of over 200km on both VHF and UHF. It would have been nice if there were more people to work with but maybe the Summer Field Day will be better represented. Thanks everyone who I worked with, those who helped me and to Barry VK3BJM for providing me some big scores. See you all at the Summer Field Day.

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From Circuit to Chassis

Drew Diamond, VK3XU
45 Gatters Rd., WONGA PARK, 3115

It is probably a safe bet that the most popular home-brew radio projects are power supplies, antenna couplers and linear power-amplifiers. All of these items require some sort of chassis/case assembly to house the device. But for some constructors, it seems that the necessary metalwork job can be rather daunting, with the result that the urge, or desire, to build something is seldom fulfilled.

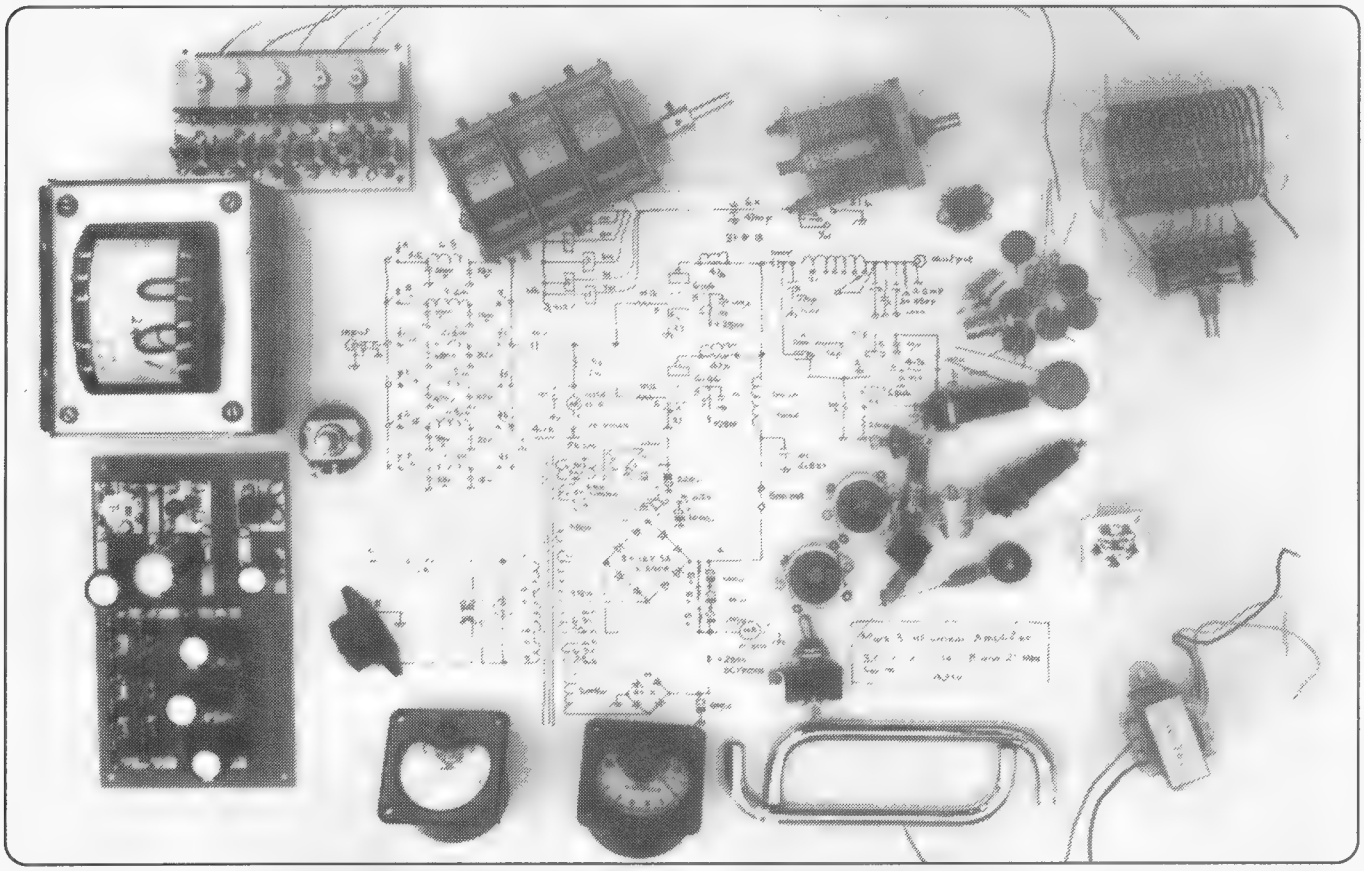

Photo 1:Components and sub-assemblies

Apart from power supplies perhaps, few of the ready-made metal boxes really suit couplers and amplifiers. And factory-made cases are usually quite expensive.

Depending upon available tools, material and experience, there are many ways that an amateur may construct a chassis to suit an application. Let me describe just one method which, with care and practice, yields quite acceptable results using ordinary tools. Front and back panels are of 3 mm aluminium sheet, connected front to back with four 12 mm square-section Al. rods. Good mechanical rigidity is thus obtained by using reasonably thick panel material in a simple construction. In the example shown here, we see a re-build (to reduce size, and to accommodate new bands) of a small 100 W HF linear amplifier originally made about 20 years ago.

Having decided on a project, and found (or designed) a suitable circuit, it is not a good idea to rush ahead with the metalwork on the assumption that key parts will be available when required. Rather, we should obtain at least those major components whose size have an influence upon the dimensions of the case. And if all the necessary parts can be acquired before work is started, so much the better. Any sub-assemblies should be fabricated early in order to fully determine the shape and measurements of the chassis. Depicted in Photo 1 are all of the main components for the job, including switched input filter assembly, power supply circuit board and output tank coil/switch assembly. It would be prudent to check, as far as possible, the serviceability of important size-determining parts such as (in this example) power transformer, filter capacitors and meters.

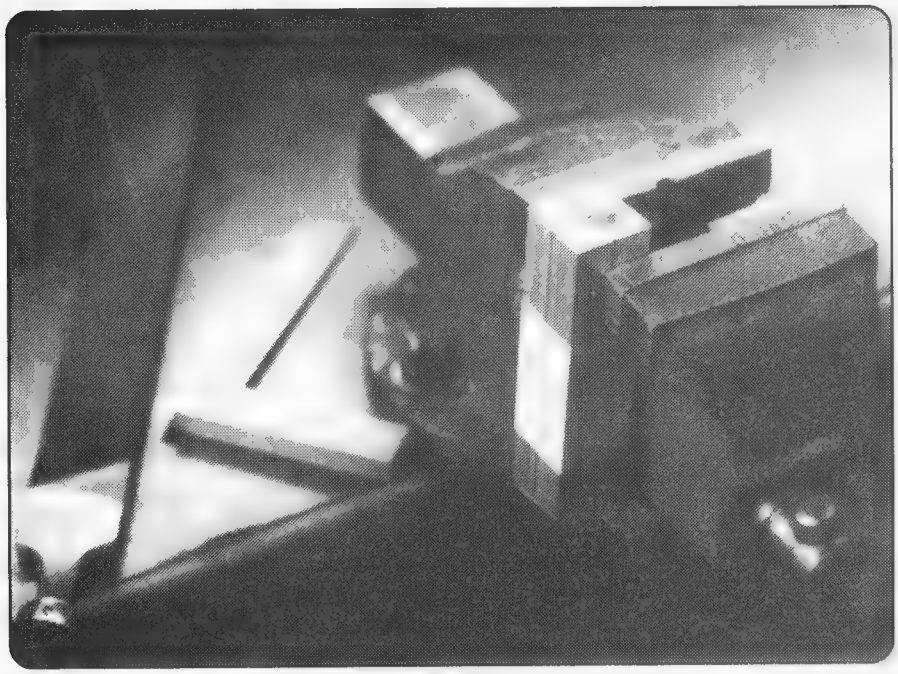

Photo 2:Filing the rod ends

With all of the parts to hand, the builder should now be able to form a pretty good mental picture of the chassis/case required. With pencil and paper, make a sketch of the envisaged layout, keeping in mind (for an amplifier like this one for instance) which parts must go below chassis, and those above. Obey any special instructions specified by the circuit designer. Be on guard for potential 'clashes'- where the fitting of one part excludes, or interferes with another. Remember to allow for ventilation of heat producing components such as power tubes/valves. Tank coils should have adequate all-round clearance- at least half coil diameter, and preferably one coil diameter.

With dimensioned sketch and tape-measure in hand, visit your local aluminium merchant. Off-cuts are usually cheaper, so check their rack to see if there is some pre-cut material which suits the job. Also, some scrap-metal merchants/ re-cyclers sell quite good factory off-cuts at considerably lower cost.

Accurately mark-out and cut the front and back panels to size using the means available. If you do not have access to a guillotine, use an electric jig-saw (as described in Ref. 1) or scroll-saw or band-saw. All finished corners must be exactly 90 degrees Remove burrs and tool marks with a smooth file.

Hack-saw four pieces of 12 mm (or thereabouts) square-section Al. rod about, 1 or 2 mm longer than the actual length required. The rod ends must be finished off as squarely as your skills and equipment permit. Best method is by turning (perhaps one of your mates at the radio club has a lathe with 4-jaw chuck). Or they may be filed to square-tape the four rods together as a 2 x 2 bunch, fix vertically in your vice and square off the ends with a smooth file, as depicted in Photo 2. Test for exact squareness with a try-square.

The rod ends must be drilled and tapped to accept 4 BA or 5 mm or 5/32" Wh screws. If you do not know how to drill and tap: Refs. 2 and 6 are suggested as excellent guides (should your local

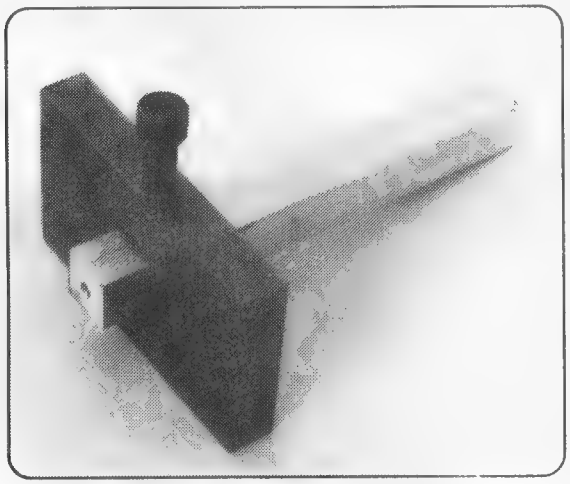

Photo 3: Work-holding jig

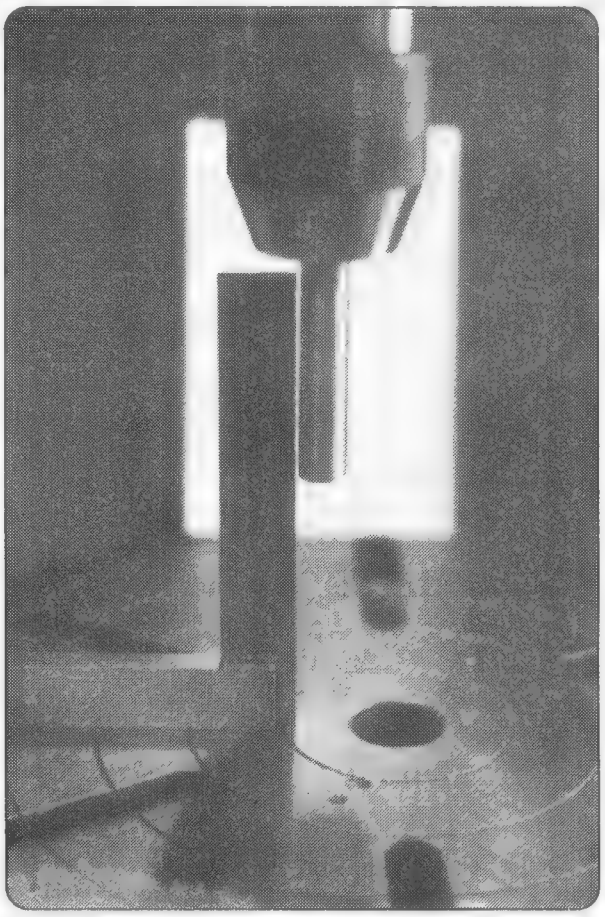

Photo 4: Checking drill table

Photo 5: Drilling a rod end

library not have a copy- request an inter-library loan, then practice some drilling and tapping in scrap material first). In order to drill the tapping hole axially using an ordinary bench-drill- and you do not have a vee-block; consider making a work holding jig similar to that shown in Photo 3. A 10 x 40 mm x (say) 70 mm long piece of mild steel is drilled centrally with a 16.5 mm hole to accept the 12 mm sq. rod. A hole for a 1/4" Wh or 6 mm clamp bolt is drilled and tapped in one side of the holder as shown.

Before any drilling is done, it is essential to ensure that the drill table is at right angles to the chuck. Fix a suitable length of round rod in the chuck, and present your try-square to the rod, as illustrated in Photo 4. Adjust the table as necessary (you should find a fixing bolt and graduated scale beneath the drill table).

With your scriber, mark across the diagonals for each rod end, then accurately centre-punch where each tapping hole shall be. Fix the rod(s) in the jig as depicted in Photo 5.

There are various trade cutting fluids for aluminium, but I find that ordinary auto transmission fluid or sewing-machine oil makes a good lubricant for drilling and tapping Al. Using the appropriate tapping drill, bore a shallow hole first, then insert a drop of fluid into the hole, then continue drilling. If the bench-drill has a depth-stop, set it for a drilling depth of about 25 mm- or just a bit longer than your screws. Withdraw the drill periodically to clear the swarf and add more fluid. Don't force the pace, otherwise drill breakage may occur.

Now, with the 8 holes drilled, carefully counterbore each hole to exactly screw diameter to a depth of about 5 mm (depth-stop again), which greatly aids in getting the tap started at right angles, and helps prevent cross-threading when the screws are inserted later.

Having prepared the four rods, the front and back panels may be drilled accordingly. A chassis pan was required in my example. Front and back panels may be temporarily assembled, which then allows an exact measurement to be made for the chassis pan. To provide support for heavy components, and strengthen the whole assembly, allow for a 12 mm (plus material thickness- say 1.5 mm) 90-degree flange front and back of the pan. The 90-degree flanges may be bent using the methods described in Refs 1 or 3. Remember to allow for the material thickness when bending (Ref. 8).

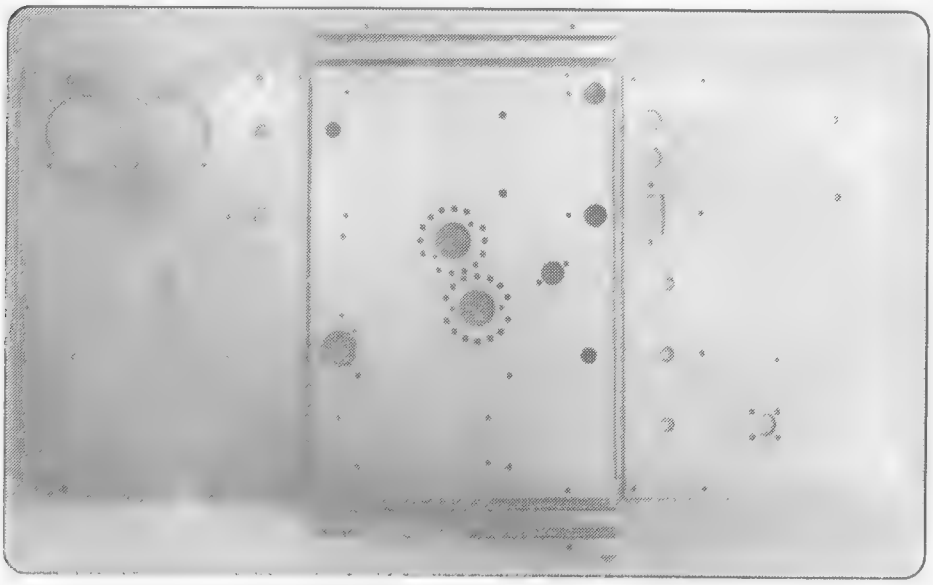

Photo 6: Chassis components

Drill two or three holes in the 90-degree flange front and back, and two each side. Now use the pan as a template to exactly locate corresponding holes in the front and back panels, and the two side-member rods. My completed chassis components, ready for assembly, are shown in Photo 6.

With the chassis pan temporarily fitted, it is now possible to experimentally position your

components upon the chassis and determine exactly where each part shall go. The resulting pre-drilled bare chassis is shown in Photo 7. 'D' style equipment handles are recommended for the front panel, which also permit the chassis to be laid face down during assembly and service (Photo 8).

File a slight round upon the top-most corners of the front and back panels- just a few strokes with a smooth file, to permit the top cover to fit snugly. Top and bottom covers may be "made-to-measure" using 1.3 or 1.6 mm Al. sheet. Don't forget to include the thickness of your bottom cover.

For the top cover, allow about 5 mm extra overhang for each side, much of which is "taken up" by the bend. You can always remove surplus metal by nibbling or filing later- putting it back is a bit more difficult. Make one bend, then test for fit upon the chassis, thus permitting any corrections on the second bend. The cover screw fixing holes are drilled in top and bottom covers, which then provide a "template" for you to transfer their positions exactly onto the bottom rod members, which are drilled and tapped accordingly. Using metal-stamps, or by scribing, number or mark the four rods and panels to assign congruence upon final assembly.

A good paint job adds greatly to the appearance of your project. Auto spray paints are ideal for radio case applications. Therefore, if desired, apply a grey undercoat primer, then top-coat to required colour- such as gun-metal or cast-iron.

The metal must first be rubbed back, using fine emery or glass-paper, to remove any tool marks and provide an effective 'key' for the paint (Ref. 1). Nylon feet, or fibre or timber runners should be fitted to the bottom panel. As a nice finishing touch, and to win extra points in your Club's home-brew

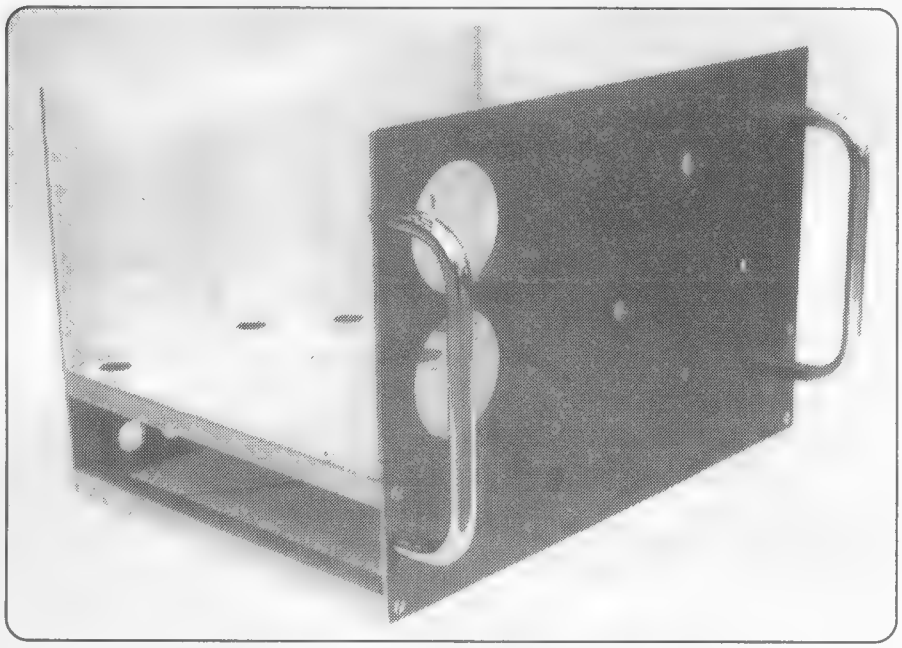

Photo 7: Bare chassis

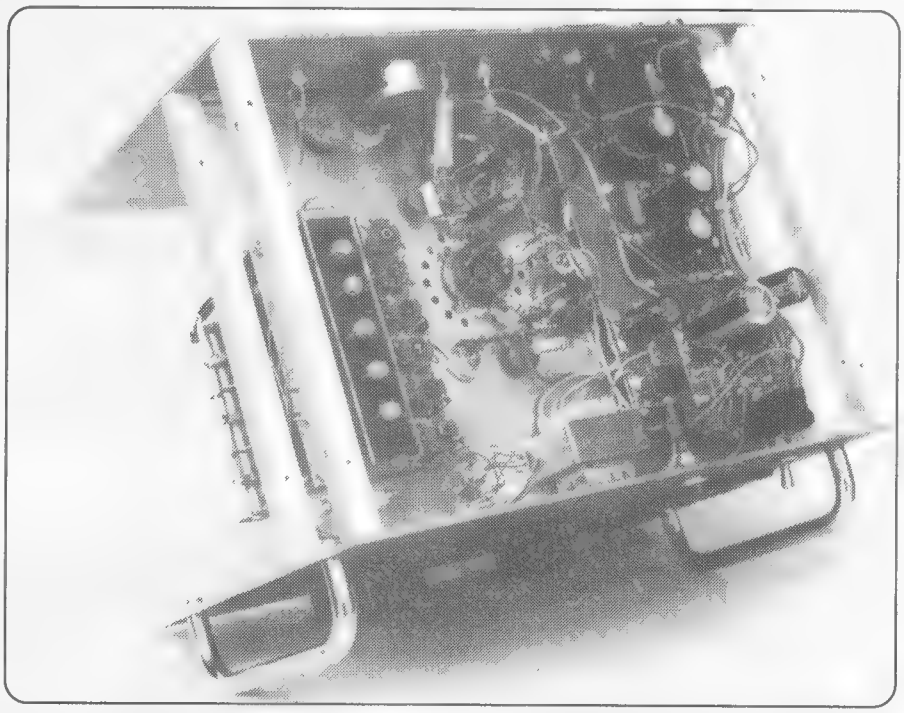

Photo 8: Under chassis view

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competition, suitably label all controls and connectors. Photo's 9 and 10 show the completed amplifier.

References and Further Reading

1. "Making Boxes with Ordinary Tools"- Diamond, AR May '98.
2. Drills, Taps and Dies; Tubal Cain- #12 in the Workshop Practice Series. Argus/Nexus Books.
3. "A Simple Sheet-metal Bender"- Diamond, AR Sep. '98.
4. "Homebrewing Equipment- from Parts to Metal-work"- P. Johnson, W7KBE, Ham Radio (USA) Mar. '88.
5. Radio Communication Handbook, 7th edition, Ch 17. RSGB (excellent).
6. The Amateur's Workshop- Ian Bradley. Argus/Nexus Books.
7. "Try Building Your Own Equipment"- G. Diana, N2JGU, QST Mar. '95.
8. "Designing and Bending Metal Enclosures"- D. Smith, K3LXD, QST Oct. '80.

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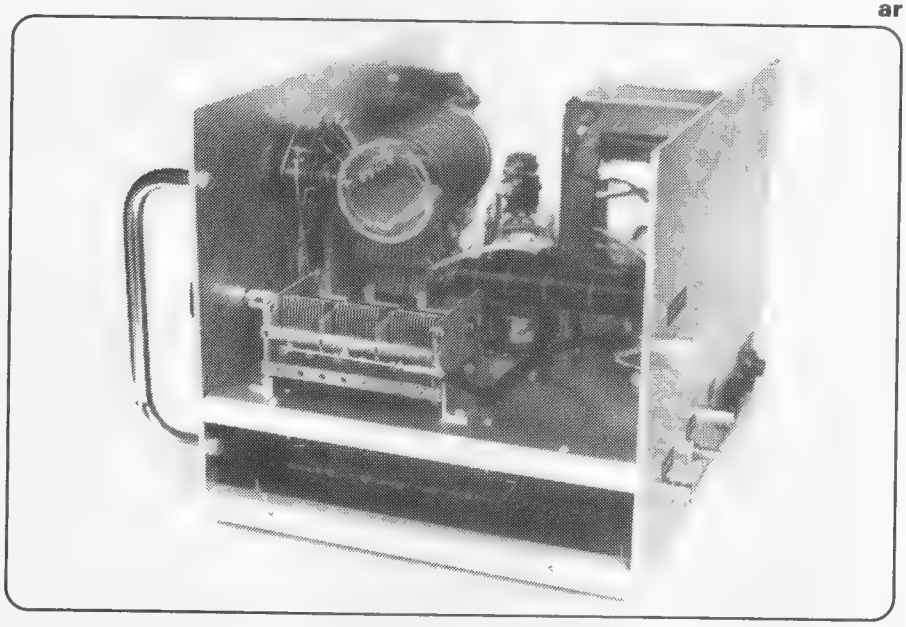

Photo 9: Above chassis view

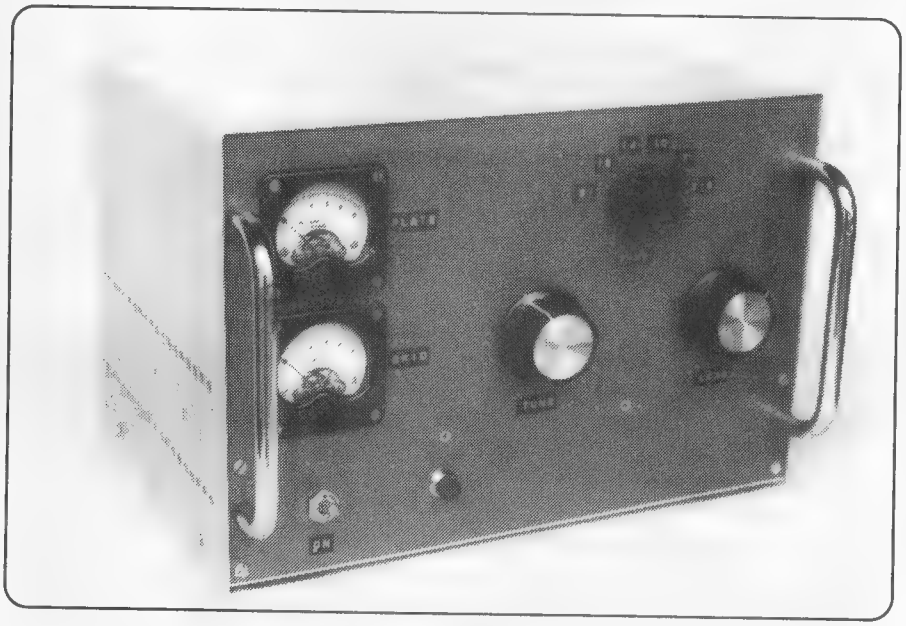

Photo 10: Complete amplifier

PIC Controlled Transmitter

(see Amateur Radio, October 2000, page 22)

Jeremy Lemke VK3TFH

AR apologises to those who wished to make the controller that the board was not printed full size. We also apologise to Jeremy Lemke VK3TFH that some of his diagrams did not reproduce as he would have wished. We now reprint full size, Figure 2 and Figure 3 from Jeremy Lemke's article.

Editor

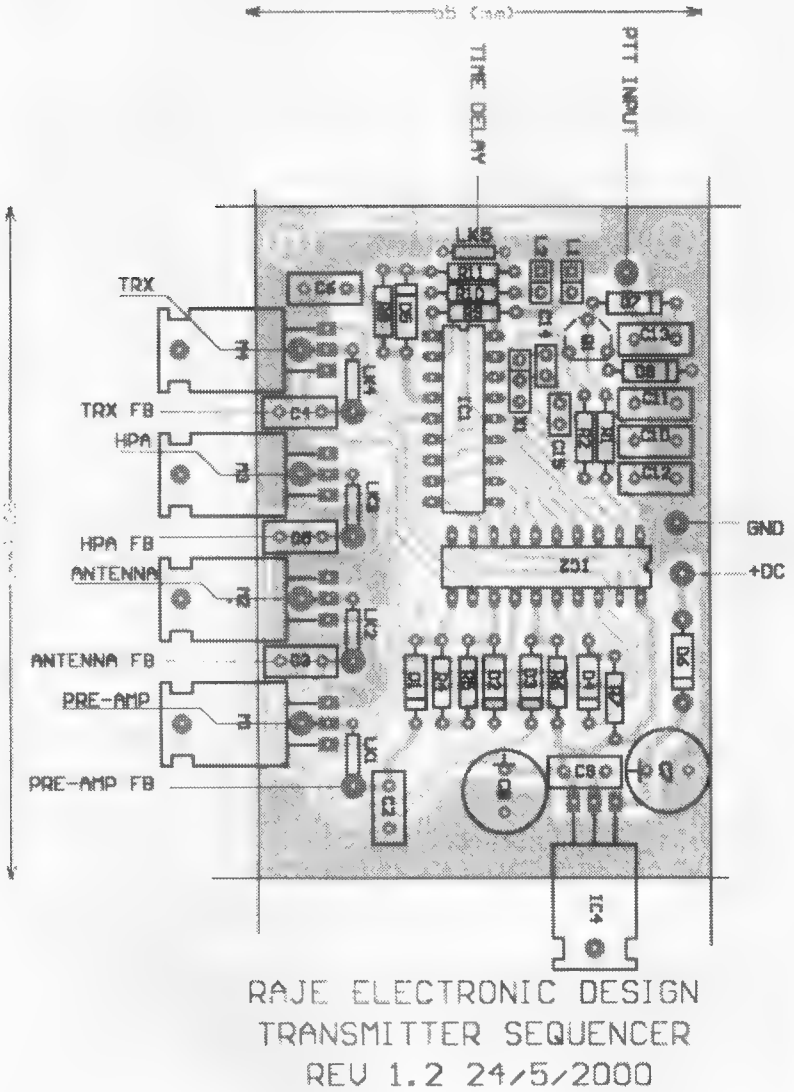

Figure 2

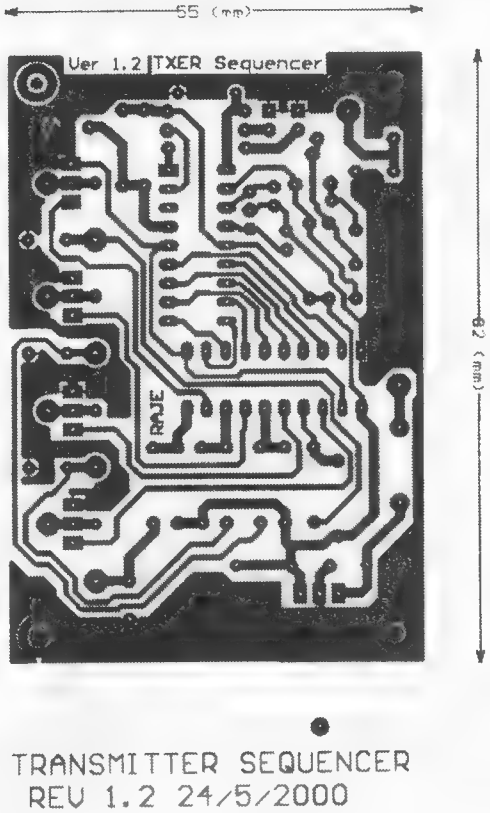

Figure 3

Adding CW to Your Repertoire

Lindsay Lawless VK3ANJ
Box 760, Lakes Entrance, Vic 3909

Modern CW as a one to one communication mode does not now require expertise at manipulating a "straight" or "bug" key. Those antiquated devices have been replaced by electronic keyers or "elbugs".

Elbugs produce perfect Morse characters at accurate preset speeds, which makes them a valuable aid to learning to read and send the code, and to acquire acceptable operating speed. For that reason alone, newcomers to the art should consider purchasing or constructing an elbug and confining any other keys they might possess to the "gash box".

Another important reason for starting and continuing with an elbug is the fact that many DX stations and satellite Morse transponders use electronic Morse readers which do not respond satisfactorily to the individual styles of mechanical keying.

The Three Chip Keyer described by Drew Diamond in *Amateur Radio*, January 1998 is as good as others of more sophisticated design and would be a good starting project. At Figure 1 is a duplicate of the circuit used by Drew but with a few modifications that will simplify construction and convert the unit to a 9 volt low current model. Included in the circuit is another transistor for keying a negative keyline TX. If that is not needed leave it out. It is a good idea to use an external easily accessible 9 volt battery. It can be embarrassing to lose power in the middle of a QSO. The 555 buzzer will not be missed; listening to the TX sidetone is closer to the real sound and helps the learning process.

The PCB supplied by Drew is very convenient but a prototype board similar to DSE part No H5604 is suitable for the purpose. That board is ideal for many one off projects.

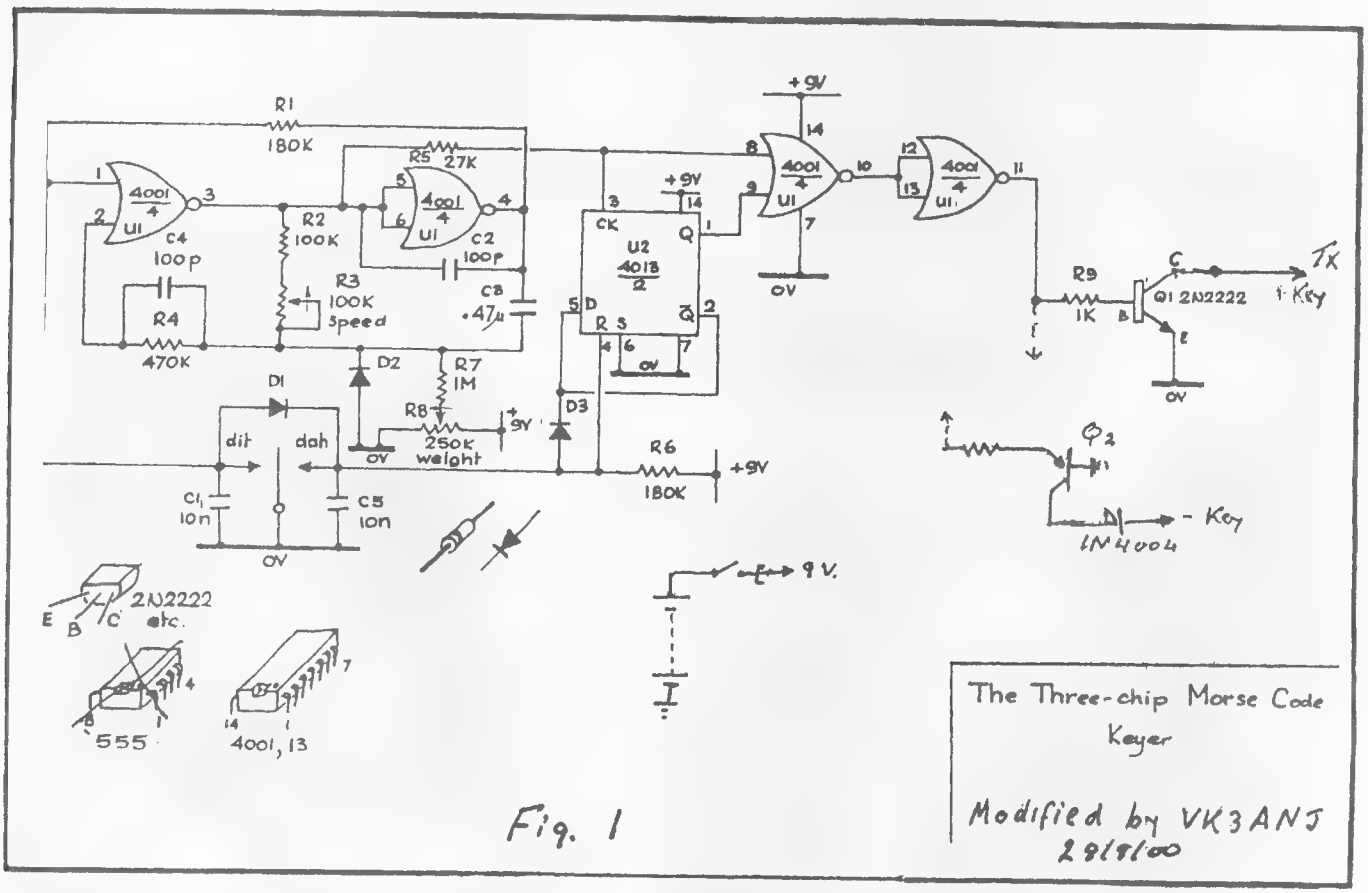

Figure 1

Laptop Mobile Supply Step Up Converter

Gil Sones VK3AUI

Voltages above the standard 12 volt automotive system voltage are sometimes required. Some laptops call for an external supply of 16 to 19 volts. This can be supplied by using a step up converter. This is a form of switching converter.

I have used this type of converter to charge SLA batteries. The device was obtained as a kit and was described in Silicon Chip July 1996. It provides 13.8 volts to charge an SLA battery even when the vehicle battery is down in the region of 12 volts. The kit is no longer available. An earlier circuit with a lower current output is currently available as a kit and uses a circuit published in Silicon Chip July 1992.

The heart of this circuit is a Motorola MC34063 DC-DC converter IC. The voltage output can be set to the voltage desired by adjusting the voltage divider connected to pin 5. In the Silicon Chip article this is made up of a 22k 1% resistor and a 2.2 k 1% resistor. I found that a 10k resistor placed in parallel with the 2.2k resistor provided a 16.5 volt output. Some experimentation would give you the voltage you desire.

The range of output possible is quite large and should meet most requirements. The ratings of the switch device and the diode should be watched.Operating over 20 volts output may tend to stress the MTP3055 switching FET used which has a 60 volt rating. With any switching device you need some head room for spikes.There are many alternative FETs with higher ratings so a substitute should not be a problem.

However modest changes of output voltage should not be a problem.

While adjusting and experimenting with a kit I observed a rise in noise level on receivers tuned to 6 and 2 meters. This may be untoward if you wish to use the device and operate at the same time. The kit is built in a plastic box and so there is no shielding and the input and output capacitors of the converter are not really capable of limiting signals escaping via the leads.

I built another device using the same circuit in a diecast box with input and output filters on the leads. The noise was reduced to an acceptable level and was not noticeable on 6 or 2 metres. The filters were single section PI using small toroid chokes and 0.47 mF disc ceramic capacitors. Monolithic ceramic capacitors could be used but I had disc ceramics on hand. The toroids were small surplus items but the prewound toroids sold by Jaycar Cat LF-1270 would be suitable. I used a toroid similar to one of these toroids from my junk box for the supply choke and it worked fine at 1.5 amp output of 16.5 volts. The diecast box was used as the heat sink for the Switch MOSFET and the rectifier diode. I built it using ugly construction where components are direct wired together over a PCB laminate ground plane. This device is shown in Fig 1.

Another modification I made was to provide 470 mF 25 VW electrolytic capacitors in parallel with the 0.68 mF capacitors used as the supply input and output capacitors. These provide reservoirs for the supply and load. They would have little effect on high frequency components. The supply is operating in the 20 to 30 kHz region.

The original converter was built from a kit which is no longer available. However Altronics can supply the toroid used in the Silicon Chip July 1996 design. It is a Neosid 17-742-22 and is Cat L 5120 in the Altronics catalogue. Other parts are available from many suppliers. The prewound toroids used in the filter are a Jaycar stock item Cat LF-1270.

You could also try using the filter with an existing device. For screening just try a metal box which would accomodate both the kit and the filter.

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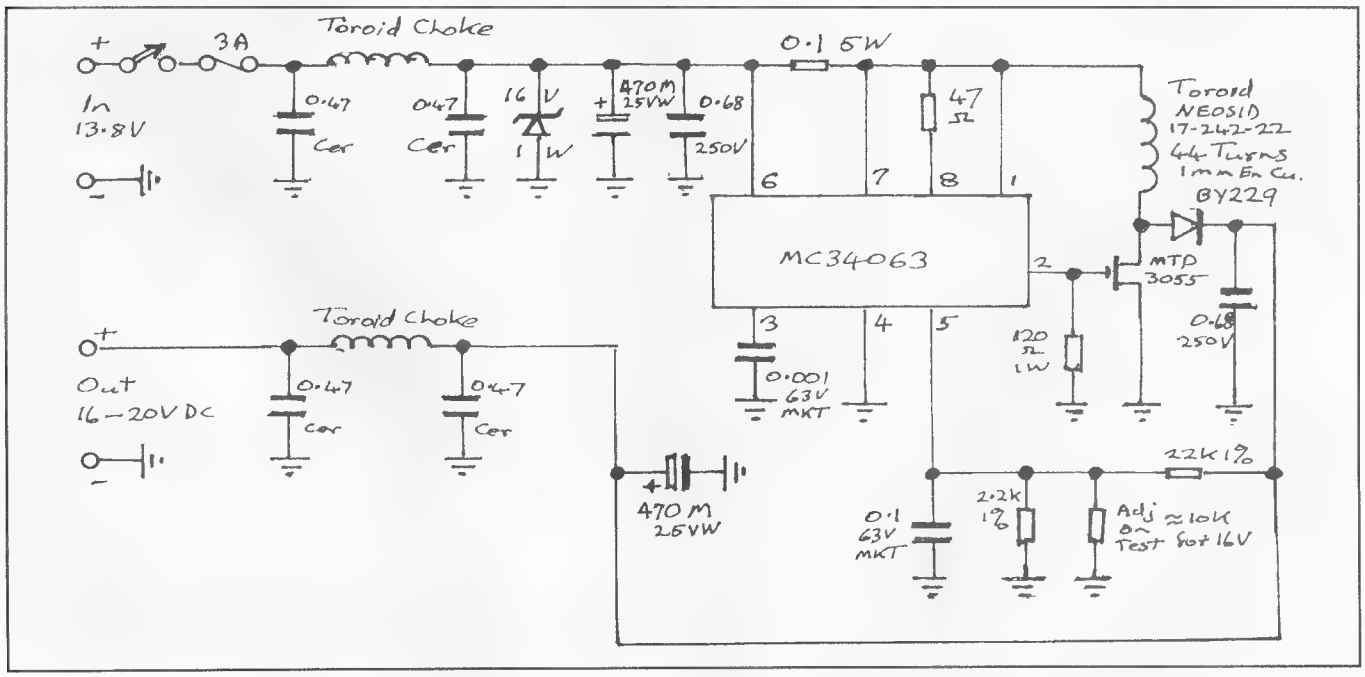

Fig 1. Step Up Converter Skeleton Circuit.

Novice Notes

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Novice Notes Online: http://www.alphalink.com.au/~parkerp/nonline.htm

The crystal set: an ideal holiday project

Of any electronic project, the crystal set would have to rate as one of the most popular. Many amateurs are on the air today because of their early construction of a crystal set. Most practical electronic books for beginners include at least one crystal set project. Unfortunately, some of these circuits take simplicity too far and deliver mediocre performance, often by omitting key components such as the tuning capacitor, or failing to provide coil taps.

This article describes a crystal set of medium complexity. It features coil taps for the antenna and diode to make it useful for both country and metropolitan listeners. The taps allow the set to cover 160 metres if desired. All parts are easily obtainable, making it a good choice for the beginner. The endless possibilities for experimentation also make crystal sets interesting novelty projects for experienced constructors.

Obtaining the parts

Tuning capacitor

A large air-spaced type, covering about 10 to 415 picofarads is preferred. These capacitors were common in valve and early transistor radios and often appear at hamfests. Their long shafts make it easy to attach large tuning knobs. When purchasing one see that the shaft turns freely, but is not loose. Ensure that the plates are straight and do not touch when meshed - use a multimeter (preferably with audible continuity function) to test this. Avoid capacitors with 3/8 inch shafts unless nothing else is available – knobs for these are not obtainable, and an old valve radio dial drum will need to be used instead.

If a large capacitor is unavailable, a small plastic dielectric unit is suitable (eg DSE R-2970). The lower maximum capacitance (160 pF) means that more coil turns are required to provide coverage of the lower end of the broadcast band. This can be partially overcome by connecting the 60 and 160 pF sections in parallel (link the 'G' and 'O' tabs). The main disadvantage of these capacitors is their short shafts, which makes it harder to attach most types of knobs.

Vernier Drive and dial

The use of a vernier reduction drive is not necessary. However, its inclusion makes tuning easier, particularly on the higher frequencies. A Dick Smith P-7170 or P-7172 is suitable, provided that it fits the variable capacitor's shaft. If your drive lacks a dial, one can be fashioned from a plastic or metal disc, such as a jar lid or salvaged computer hard disc. Glue the dial directly to the skirt of the tuning knob if you lack a vernier drive.

Diode

This is the most easily obtainable and cheapest component in the project. A germanium diode, such as a 1N60, 0A90, 0A91, 0A95 or 1N34A will be suitable. The purists still make their own diode detector with a 'cats whisker' and lump of galena, but modern diodes provide more stable and repeatable performance.

Headphones

The very old high impedance headphones are required for this circuit. A minimum of two kilohms is suggested. Medium impedance headphones (approx 600 ohms) will also work, but are less sensitive.

High impedance headphones have become difficult to obtain. Alternatives include:

1. Crystal earpiece. These are sensitive, easy to obtain and inexpensive.
2. Piezo transducer. Believe it or not, these actually will work as an earphone. Some sizes even fit snugly in the outer ear in a similar manner to modern earpieces, such as used with mobile phones. The main drawback with transducers is their peaky audio response.
3. 1k to 8 ohm audio transformer and standard low-impedance headphones. Works well, but not as sensitive as a crystal earpiece.
4. Cheating! Use a transistor or IC amplifier kit to run a speaker. This approach eliminates the 'free radio' advantage of the crystal set, but provides louder reception in weak signal areas and allows speaker listening.

Coil and Coil former

This needs to be a cylinder about 55 millimetres in diameter and 150 mm long. The length needs to be long enough to accommodate all ninety coil turns used, with enough left over for mounting to the front panel. Plastic pipe, shampoo container or similar will suffice. Though enamelled copper wire can be used for the winding, the prototype used thin plastic-covered stranded insulated wire.

Front panel

All parts are mounted on a 6mm-thick polyethylene chopping board, which forms the front panel. A hacksaw was used to cut the panel to fit inside the wooden case. Use the thinnest chopping board available so that the many screw-mounted sockets used can be fastened properly. The front panel pictured was cut to 240 mm square.

Case and handle

Use non-metallic material for the enclosure. The box used in the prototype was originally a speaker bought cheaply at a school fete. The lid (which held the speaker) was removed, and the rest of the box painted. The top carry handle is optional and came from a hardware store.

Construction

Commence construction once all components have been obtained. Plan how the parts will fit behind the front panel. Figure Two shows the arrangement used in the prototype. The coil is fastened with stand-offs and the variable capacitor is screwed to an aluminium L-shaped bracket. 4mm binding posts with banana sockets are used for the antenna and headphone connections, and 2mm micro sockets for the coil tapping points.

Start by winding the coil. This consists of ninety turns of thin stranded insulated wire close wound on a plastic tube approximately 55 millimetres in diameter. A large number of tapping points are provided so that the user can vary the set's frequency coverage, and antenna and diode coupling. This makes it possible to obtain the best compromise between volume and selectivity for a particular station.

Figure Two shows the coil construction. Start from the earth end (identified as '0' in the diagram). Make two holes in the former to anchor the end of the wire. Wind six turns and then an extra half-turn. With a knife remove about 1cm of insulation, taking care not to cut the wire. Form the bare wire into a loop and lightly coat with solder. Do not apply excessive heat - the wire insulation easily melts. Wind another five and a half turns and make another tap. Repeat for the remainder of the coil until approximately ninety turns have been wound. Add more turns and taps if using a smaller variable capacitor than specified. Again make two small holes in the former to anchor the wire.

Photo One: Front view of crystal set

Place the completed coil aside and start work on the front panel. Mount the 4mm banana binding post terminals for the antenna, earth and headphones, as shown in Figure Two. Drill holes and mount the 2mm terminals for the coil taps and the antenna, diode, variable capacitor taps. The tuning capacitor can also be fastened at this time.

Two sets of screws and spacers can be used to mount the coil to the rear of the front panel. A 10mm separation between the coil and the panel is adequate. Solder in the various components and connecting wires as per Fig 2. Use insulated wire for the connections between the sockets and to the variable capacitor. Tinned copper wire can be used for the short links between the coil taps and the 2mm sockets. Use insulated wire for the three jumper leads. The jumpers should be sufficiently long to be able to make connections with all taps along the coil.

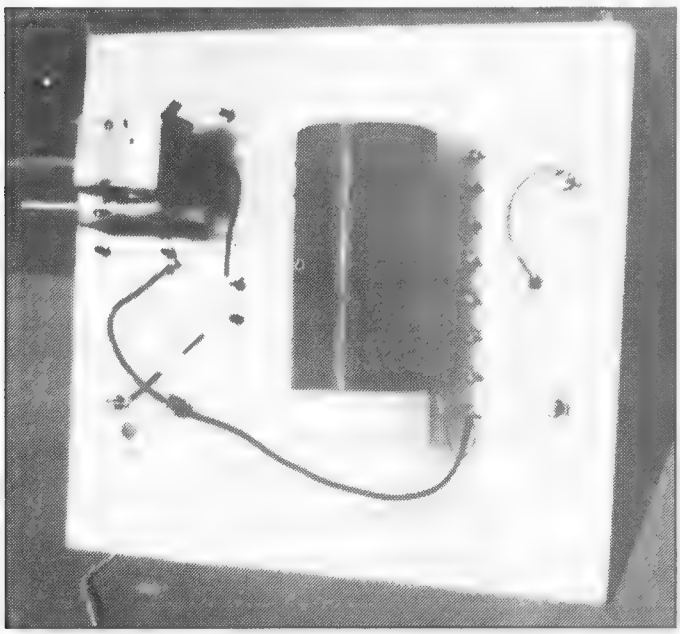

Photo Two: Inside view of crystal set

This completes the construction. The panel can now be inserted into the box. In the unit pictured, the front panel is recessed – this protects the banana sockets and dial and makes the set more rugged. It also allows attachment of a hinged lid if required.

Antenna and earth

A crystal set requires a wire antenna to operate properly. The longer and higher it is the better. A length of at least 10 metres in urban areas, and 20 – 30 metres elsewhere should provide reception in most cases. The antenna should always be installed away from power lines for safety reasons and to reduce interference pick-up. An existing amateur or TV antenna can also be effective, especially if the coaxial feedline is used as part of the antenna. This is achieved by connecting both the outside and the inside of the coaxial connector to the receiver's antenna terminal.

An earth provides stronger signals, and is essential in remote areas. In homes with copper water pipes, this can simply be a lead to the nearest cold water tap. In newer homes, where plastic pipes are used, an outside ground stake can be used instead.

For long distance reception (hundreds or thousands of kilometres) more than usual effort needs to be taken when installing the aerial and earth. Reference One suggests a length of about 100

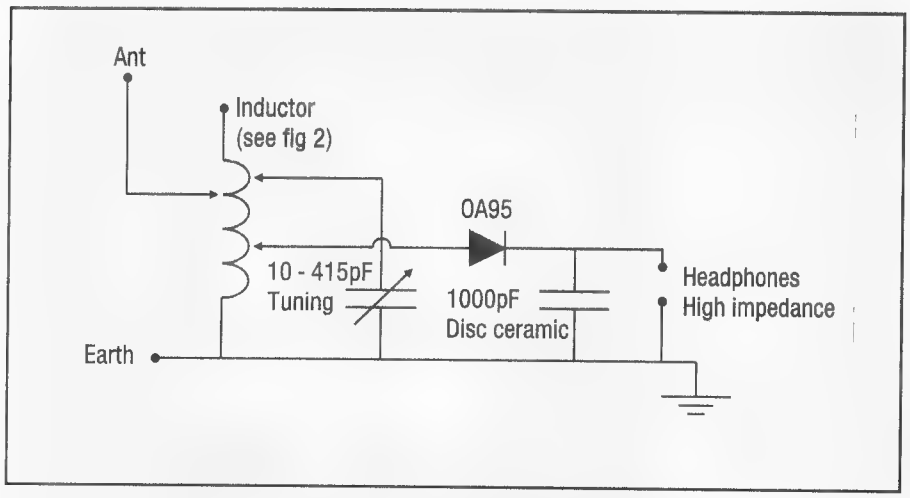

Figure One: Schematic diagram of crystal set

metres and a height of at least 12 metres. A series of buried radials is suggested for the earth, rather than the water pipe suggested above.

Operation

Connect antenna, earth and earphones. Install the three jumper leads. Set the capacitor tap to near the top of the coil (either the 78th or 90th turn) and the diode and antenna taps to approximately midway along the coil.

In a quiet room, adjust the tuning control and listen for a station. If several stations are audible, move the diode or antenna taps nearer the earth end (lower numbered turns) of the coil. This

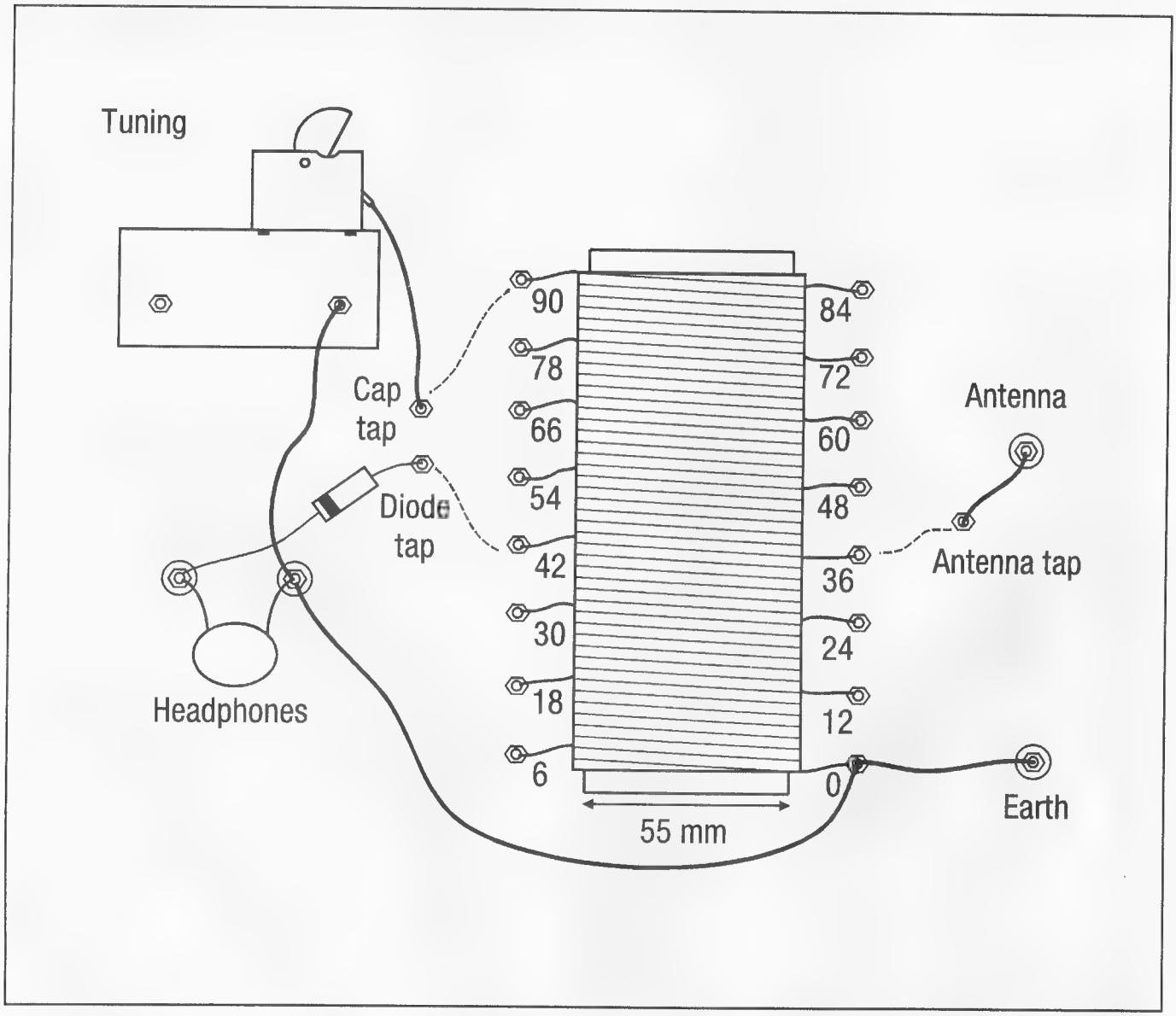

Figure Two: Rear view of front panel, showing coil details

increases the set's selectivity and makes it possible to separate stations. In a capital city it should be possible to separate at least nine or ten stations. Optimum tap settings vary across the broadcast band – lower frequency stations are often best received with higher tap settings. In rural areas volume is normally more important than selectivity, so the taps can be moved near the top of the coil.

Reception of AM operators on the 1.8 MHz (160 metre) amateur band is possible by moving the capacitor tap lower down the coil, to the 54th or 66th turn. Performance will be well down on a superhet or regenerative receiver, and SSB signals cannot be resolved. Whether you hear amateurs or not depends on your antenna system and the extent of activity from nearby operators. Here in Melbourne 160 metre AM activity includes the Sunday to Friday AM morning net and the weekly transmissions of APC News.

In many areas there are narrowcast stations between the top of the official AM broadcast band and 160 metres. Because of their low power these stations will be weaker than the mainstream broadcasters. However these stations are excellent tests of your receiver and antenna system.

Conclusion

A crystal set of moderate complexity has been described. It is the minimum required to provide good reception of local stations in urban and rural areas. However numerous refinements to increase sensitivity, selectivity or audio output can be made. These include:

1. Double tuned circuits (with variable coupling between them) to improve selectivity
2. Use of a tuned trap to null out interfering signals
3. Attention to the construction of coils to provide the highest possible Q
4. Addition of an impedance matching network to provide efficient power transfer between the antenna and the tuned circuit
5. Use of a large loop antenna for the coil to allow reception of signals without an external antenna and nulling of unwanted signals
6. voltage doubler diode detector circuit using two diodes to increase volume

Should you decide to experiment with these changes, it would be desirable to keep this set as a reference and build a second receiver as a test bed for the experiments.

Further reading

Numerous articles, books and internet websites featuring crystal sets have been produced. Some include:

1. Shawsmith A "The Early Days of Wireless – the Crystal Set" Amateur Radio Action, Vol 4, No 13.
2. The Xtal Set Society: http://www.midnightscience.com/
3. WB4LFH's Crystal Radio Resources: http://www.thebest.net/wuggy/
4. N3FRQ's Skywaves: http://www.webex.net/~skywaves/home.htm
5. Crystal Radio Design Page: http://uweb.superlink.net/bhtongue/
6. Yahoo Xtal set forum: http://clubs.yahoo.com/clubs/thecrystalsetradioclub

Postscript: HamBabble (NN October 2000)

There was a big response to October's column on HamBabble, all of it positive. Several correspondents suggested further items for the list. These include: dBs (dollar bills) – term used by amateurs sensitive about breaching the regulations by discussing matters of pecuniary interest, or involving money; (going) horizontally polarised - going to bed; and OM (Old Man) – amateur version of the formal sir, or the less formal mate. Then there's the throat clearers or over openers such as 'Fine business on all that Tony', 'OK there Keith', 'All noted Lee', et cetera. As always, more examples of HamBabble would be appreciated.

ar

Australian Communciations Authority

EMR Compliance Self-assessment Trial

The Australian Communications Authority (ACA) invites eligible radiocommunications licensees to take part in a trial of materials for self-assessing electromagnetic radiation (EMR) compliance

The draft materials will allow licensees of some radiocommunications transmitters to self-assess compliance of their transmitter against the limits in the *Radiocommunications (Electromagnetic Radiation—Human Exposure) Standard 1999* (as amended from time to time).

Although the standard currently applies only to transmitter installations supporting cellular mobile telecommunications services, all radiocommunications transmitters will be subject to the standard by the end of 2001.

When the regulatory arrangements are fully in place, the ACA intends to allow some licensees to determine, for themselves, whether their installations comply with the standard. In anticipation of these changes, the ACA is making the self-assessment materials available to licencees to trial on a voluntary basis.

The trial will assess the effectiveness and user-friendliness of the self-help guidelines by obtaining feedback from the licensees, which will enable the ACA to fine-tune the materials. The trial will also provide licensees with the opportunity to bring their installation into compliance before compliance becomes mandatory.

The self-assessment materials include charts and graphs that will allow trialing for the following radiocommunications services:

- Fixed Link
- Land Mobile Base Station
- Low Power TV and Radio Broadcast
- Paging
- Amateur Radio
- General Radio

The materials are designed to assist licensees to make a simple assessment of whether their transmitting facilities comply with the EMR standard.

The self-assessment materials are available for trial from **15 September 2000 to 15 January 2001**. Licensees using the materials are required to return an evaluation questionnaire to the ACA. Participants may also be offered a free validation of their assessment through measurement by the ACA.

Licensees wishing to take part in the trial may obtain the materials via the ACA's website www.aca.gov.au/standards/emr.htm or by contacting the ACA on telephone:

(02) 6256 5552.

ALARA

Christine Taylor VK5CTY
VK5CTY@VK5TTY or geencee@picknowl.com.au

Final Report On Hamilton

The YL2000 International in Hamilton was a credit to everyone involved. It will have gone a long way to fostering friendship among YLs all over the world. Everyone who attended will be keen to go to the next international meet in Palermo on the island of Sicily in June of 2002. The hostess for that meeting will be Ruth IT9ESZ, well known to many amateurs for her DX activities. If you are planning an overseas trip in 2002 consider including Palermo in June on your itinerary. More details will be published, as they become available.

If you are touring Australia in 2002 you could also think about joining us in Murray Bridge (South Australia) at the very end of September. That is the venue for the next ALARAMEET for which pamphlets were handed out to many of the attendees in Hamilton.

Perhaps you could make it all part of a round-the-world trip. Palermo in June and Murray Bridge in September.

Lynn ZL2PQ, Jacqueline ZL1JAQ and Rosemary ZL1WRO with Jacqueline's rig in the background. Photo first appeared in *The Auckland Herald.*

Publicity News

Publicity for the YL2000 was very well covered. In the lead up to the gathering a photo and a description of the purpose of it all appeared in the "Auckland Herald". The photo is attached here; it shows Lynn ZL2PQ, Jacqueline ZL1JAQ and Rosemary ZL1WRO with Jacqueline's rig in the background.

During the meeting we were asked if anyone was prepared to speak on the local radio station in Hamilton. Several YLs accepted the offer including Robyn VK3WX, Vice President of ALARA. Unfortunately I was unable to listen to the broadcast but hope to have a copy of it for ALARA's historical records. To have the local station request interviews shows that the girls organising the YL2000 had spread the word wide.

Also, during the weekend Raija SM0HNV passed on to me a copy of a page from a Swedish amateur radio magazine on which there was an article she had written about her visit to the YLRL meeting on the "Queen Mary" at Long Beach, California in June and her attendance at the ALARAMEET in Brisbane in October last year.

After Hamilton

Two of the tours arranged by the WARO girls, to follow on directly from the Hamilton weekend were to Rotorua, either for a one day or a two-day tour. Two particular visits were special. For overseas visitors the Farm Show was an eye opener. It started with dogs bringing in a small flock of sheep to be sheared and another small herd of cattle for milking and continued with an excellent demonstration of the procedures, which in New Zealand and Australia occur every day.

The two young people demonstrating were very good and most amusing without being silly. All the steps from sheep's back to knitted jumpers was shown as were all the processes that provide the milk, cream and butter we all buy each day.

For the Asian visitors there was a commentary they could listen to and brochures in many other languages were available. Then to cap it all off some of the people in the audience (including some of our group) were called down from their seats to participate in turning the handle of a separator or a butter churn or in feeding the baby lambs and goats from a bottle. A well chosen demonstration.

Apart from the sight of the geysers and mud pool of Rotorua which are a must for all visitors to New Zealand, the other very good tour was the hangi (a meal for which the food is cooked in the traditional way, in a pit heated by hot stones) arranged at a Maori maire or village. We were asked to elect a Chief for the evening, (John VK2ZOI, OM of Dot VK2DB), who along with Chiefs from the other tourist groups were "greeted" by the head of the maire with dance intended to frighten us away, if we were there as enemies, before we were allowed into the meeting hall. During the evening, as well as enjoying some beautiful food we were entertained with dances and songs and told something of the Maori culture that

would have greeted the first Europeans.

Again, congratulations are in order to the committee for their choice of tours to illustrate such different aspects of New Zealand life.

Norfolk Island And VK9YL

Fourteen YLs and 4 OMs went to Norfolk Island after the weekend in Hamilton. They took wire aerials and a mast, though the mast could not be brought ashore for several days because the sea was too rough, but they certainly did not operate for the whole of the seven days they were on the Island. Nevertheless they made the amazing total of 3,450 contacts with 111 countries.

Elizabeth VE7YL on CW and VK4SJ on phone probably made the most contacts and coped with the "dog-piles" best but most of the others made some contacts.

Gwen VK3DYL was the organiser with June VK4SJ, Bev VK6DE and Poppy VK6YF representing Australia and Biny ZL1AZY from New Zealand. Scandinavia was well represented by Raija SM0HNV, Brigitta SM0FIB and Eine SM0UQW from Sweden with her OM Lars SM5CA (who, with Doug VK4BP, Merv ZL1AVY and Ted OH1BV mostly looked after the aerials and set up the radios) with Maya OH1MK from Finland, Unni LA6RHA and Ingrid an SWL from Norway. Ella G0FIP was the only representative from Britain at Hamilton and on Norfolk Island, with Elizabeth VK7YL from Canada and Mio JR3MBF from Japan to make up the international group.

They were delighted to have a visit from Kirsti VK9 YL (known to many from her articles in the magazines as well as on air and OM Jim one day, and amazed to bump into Val VK4VR and OM Brian who were also visiting the island, and aside from radio everyone enjoyed touring Norfolk Island as widely as possible.

Thanks to everyone who contacted them as a consequence of hearing about it through this column

Season's Greetings

As this will reach you as the Christmas/New Year period has us all rushing around with family and holiday commitments please accept greetings to you all from ALARA and pause to enjoy the cartoon drawn by Sally VK4SHE.

BR

AR Club Notes

Adelaide Hills Amateur Radio Society

The President and committee wish members and all amateurs Season's Greetings. May all you radio dreams come true.

The annual Buy and Sell will be over by the time you read this but it is certain to be as successful as ever, as a social occasion and as an opportunity to exchange your "treasures" for someone else's "treasures" or maybe to buy some new gear just in time to enjoy it during the holidays. A photo taken one year shows the "wall to wall" crowd that is normal for this event December and January are special for members of AHARS. In December they hold the Christmas Dinner, this year on December 2nd so it does not clash with later activities, and in January when members will visit the Elizabeth Radio Club and have an opportunity to tour the water tower. If you don't know what this means, perhaps you had better come along, too.

BR

GEELONG RADIO & ELECTRONICS SOCIETY HISTORICAL RADIO DISPLAY — see page 13

Technical Abstracts

Gil Sones VK3AUI
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Save Your Tuner For Two Pence

The catchy title refers to the use of cam switches fashioned from old British pennies to switch a T match tuner into the appropriate L configuration in order to reduce losses. Many of the popular tuners use a T match configuration which can result in higher losses in some matching situations and higher stress on the tuner components. The use of an L match in these situations may lead to lower losses and less stress on components. Stress on tuner components can result in arcs or smoke from overheating. The problem together with a way of turning the T match into two types of L network was described by Tony Preedy G3LNP in Rad Com May 2000.

The T network can be represented as two L networks in series. The load is transformed to an intermediate impedance level by the input network. The intermediate impedance is then transformed to the 50 ohms that the transceiver prefers. The common element of the two networks is the inductor which has to dissipate the losses of both networks. The usual tuning method is to start with maximum capacity in the capacitors and then adjusting the antenna capacitor and inductor for minimum SWR and then to finally adjust the Tx capacitor with tweaking of the other adjustments. This method is an attempt to minimise losses.

Tony G3LNP modified an MFJ989 tuner by adding cam switches which could short out the capacitors and so convert the tuner into either of two L networks. The cam switches were fitted to the capacitor shafts and used cams fashioned from old British pennies. The local ones would probably be similar. The mechanical details of the cam switches are shown in Fig 1. Other brands of tuner could be treated in a similar fashion.

The cams are fashioned from old pennies. The author recommends a search of old sofas as a source of pennies. The pennies do not have to be mint and should be reasonably easy to find even though they are over 30 years old. The penny is reduced over an arc of 270 degrees to a 5 mm radius with a small indent filed in the outer radius of the larger radius. The cam is soldered to half of a brass shaft coupler for attachment to the capacitor shaft.

The stationary brass contact can be fashioned out of an old telephone relay spring or a piece of springy bronze. Refer to Fig 1. for details. Some ingenuity may be required to adapt available materials.

The idea is that the capacitor has a position close to fully open where it is shorted out. You should be able to have close to the full normal capacity adjustment range as well as the shorted out position.

The tuning procedure is to tune for minimum VSWR in first one L configuration and then in the other. If this fails then resort to the T configuration. The L configuration matches a lower to a higher impedance and so with the two L configurations both low an higher impedances can be transformed to 50 ohms.

The author found that on bands below 14 MHz there was sometimes not sufficient capacity available to use the L configuration. However on bands above 14 MHz the L configuration could be used to advantage. The coil in the L position could generally be operated with more turns in circuit. This means less voltage across each turn. The capacitors in the L configuration were usually working with more capacity in circuit and less voltage across the capacitor.

An interesting and simple modification to reduce tuner losses and it should be especially beneficial when matching to higher VSWR loads.

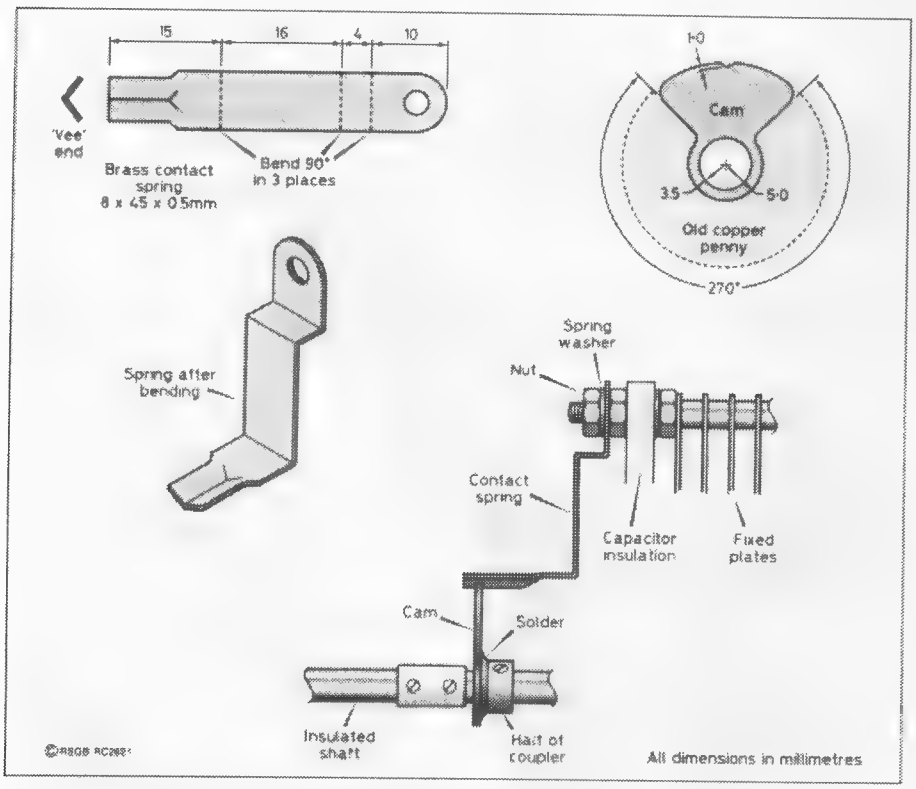


Fig1. Mechanical Details of the Cam and Contact for Shorting the Capacitors in a T Match ATU.

Matching Low Impedance Antennas

Some interesting techniques for matching low impedance antennas appeared in the Technical Correspondance Column of QST June 2000 edited by Paul Nagel N1FB. The ideas came in a letter from Albert E Weller Jr WD8KBW who proposed a number of alternative ways of matching a yagi with a 13.3 ohm feed impedance. A previous article in QST Oct 99 by Bob Zimmerman NP4B had used the technique of offset feed to match the antenna. This appeared in Tech Abstracts Aug 2000.

Albert WD8KBW provided four alternative methods to match a 13.3 ohm impedance to a 50 ohm line using a variety of coaxial line transformers. A simple near match could be obtained with a simple quarter wave line transformer using a quarter wave 25 to 26.5 ohm line formed by paralleling two quarter wave lines of 50 to 52 ohm cable. The SWR achievable is 1.06 : 1. This may well be close enough.

A variety of other matching solutions are shown in Figures 2, 3, 4, & 5. These use a variety of coaxial cables of both 50 and 75 ohm impedance. The lengths are given in degrees. A quarter wave is 90 degrees. The actual lengths of cable need to take into consideration the velocity factor of the cable. These vary due to the dielectric used and for really accurate work may have to be determined for the coax used. Otherwise use the published velocity factors for the coax used..

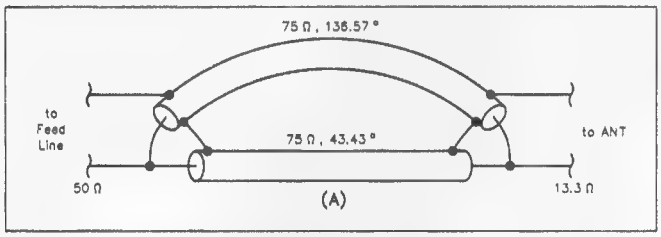


Fig 2. Parallel Line Transformer Using 75 ohm coax to transform 13.3 ohms to 50 ohms.

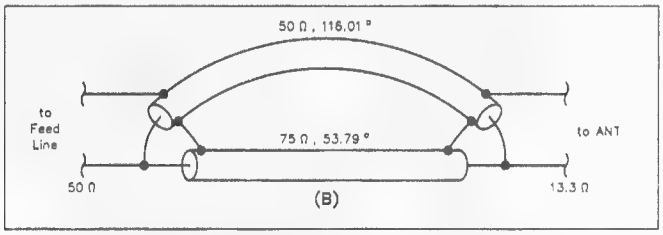


Fig 3. Parallel Line Transformer Using 50 and 75 ohm lines.

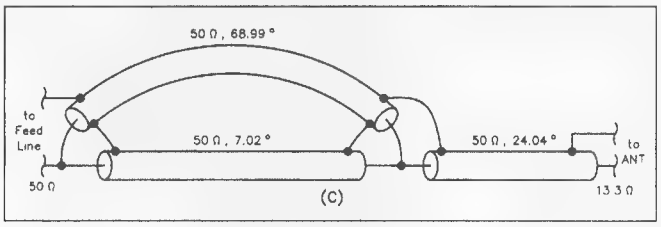


Fig 4. An Alternating Line Transformer with the output line formed by a parallel line transformer.

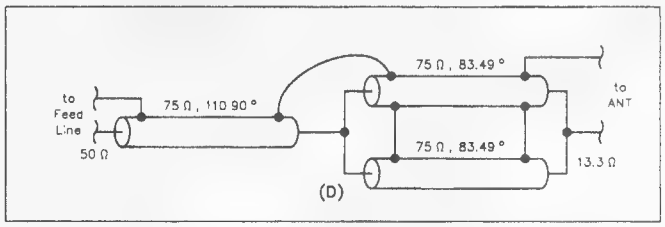


Fig 5. A Series Line Transformer with the Input (37.5 ohm) Line formed by two 75 ohm Lines in Parallel

75 ohm Coaxial Cable

The Long Wire For 6 and 10 published in Tech Abstracts July 2000 from from the original article in QST April 2000 used 75 ohm coax for the matching section. Some constructors have reported difficulty with the 75 ohm coax locally available. The coax has a foil outer as well as a skimpy copper braid and is intended for TV use. Termination is difficult at the antenna end.

The coaxial cable which uses a foil and braid is usually intended for use in TV antenna systems. The connectors used in the TV system are usually clamped or crimped onto the foil and braid to make connection in the connector. Rather than attempting to solder to the foil and braid the use of the TV type connectors is recommended. These can be plugged into a socket where a wired connection is needed such as at a feedpoint. At the other end there are adaptors available which can be used to connect to the connectors we are used to.

The connectors I have seen for this type of cable are either the Type F or the Belling Lee which seems to be called TV, 75 ohm or PAL. The cable is often loosely called RG59 but is really only a 75 ohm cable which has approximately the same diameter.

One point to watch is that many of the TV cables may deform and cause trouble if they are subject to stress such as holding up the weight of the feedline or being bent around a small radius. They often use a foam dielectric and this should be taken into account where the electrical length is critical. You can avoid undue stress by supporting them from a messenger cable to take the weight.

CHRISTMAS/NEW YEAR BREAK FOR WIA FEDERAL SECRETARIAT

The Melbourne secretariat of WIA Federal will close for the Christmas-New Year break on **Friday 22nd December 2000** and re-open on **Monday, 29th January 2001**.

The WIA Exam Service advises that amateur examination papers for marking and orders for exam material required over the holidays, should have been received in Melbourne by Monday, 4th December to ensure posting before Christmas.

Any material or orders received after that date cannot be guaranteed to be dealt with before the break and may have to wait until the Exam Service re-opens.

Buried Treasure...

This song must not be cut out and sold apart from the "NEWS OF THE WORLD." Anyone disregarding this intimation will be proceeded against.

No. 1,406.
Copyright.

DON'T HANG THE WASH

Written by HARRY EAST. Composed by HARRY EAST

Moderato. Key G.

1. Last week I bought a lit - tle wireless set, Thought I'd like to list-en in when

Till ready.

home I get, When my work was o - ver I thought it would be grand To list - en to a con - cert or a

nice brass band. In the gar - den I put up my aer - i - al, Think-ing of the treat I had in

D.t.

store. When I got home to - day the wife was feel - ing ve - ry glad, She said "This is the fin - est dry - ing

f.G.

day I've ev - er had." When I saw the wash-ing hang-ing I got mad, I look'd at her and then be-gan to roar:

This sheet music was found in an old newspaper from England by Peter Brougham VK3PJB

ASHING ON THE AERIAL.

Y EAST | ASHLEY RICHARDS. Sung by HARRY EAST.

NEXT WEEK

LESLIE ELLIOTT'S CHARMING BALLAD,

I SHALL ALWAYS HEAR YOU SINGING IN MY HEART.

CHORUS.

Don't hang the wash-ing on my aer - i - al, Mag-gie! I want..... to list-en in;

When I want to hear the mu - sic, how it hurts, For all I can hear... is the flap-ping of the shirts; You

cause a dis-turb-ance of the wave - length, Mag-gie,..... I - seem pun - ish'd for my

rall.

sins,..... { "Eight-een Twelve" by old Tschai-kow-sky makes my cats-whisk-er Pop-poff-ski..... And... mu - sic by No-vel-lo sounds as if it's gone 2 L O,..... }

rall.

a tempo.

1st time. 2nd time.

Ev - 'ry time a wash-ing day be - gins..... - gins.....

a tempo.

complete words on page 51

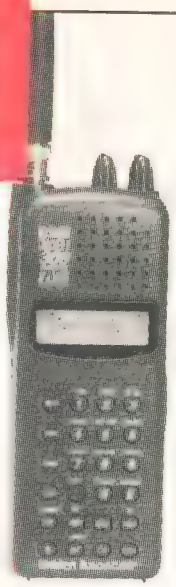
DON'T MISS THE ACTION!

Uniden 245XLT Trunk-Tracker™ Scanner

Now you too can follow the activity on the "trunked" radio networks used by many Government, business, and emergency services organisations. The new Uniden 245XLT Trunk-Tracker is a specially designed scanner that can read the control channel data on a number of trunked radio systems, allowing the receiver to follow specific users, or groups of users, as their transmissions automatically change frequency through a trunked network. Compatible with many Motorola and EDACS analogue trunking systems, the 245XLT is also supplied with a PC interface cable for use with third-party software. The 245XLT covers 66-88, 108-174, 406-512, and 806-956MHz and provides 300 memories in 10 banks for storing favourite frequencies, 5 pre-programmed Search-bands, Multi-Track scanning that allows you to scan a mix of conventional and trunked systems, and 10 Priority channels (one per memory bank). Super-fast Scanning and Search facilities are also provided (Scan at 100 channels per second for non-trunked services, and Search at either 100 or 300 steps per second), as well as battery-free memory back-up, Data skip to limit reception of data transmissions, an Attenuator to reduce overload from very strong signals, and a Battery Save facility to extend battery life. Each 245XLT is supplied with a NiCad battery pack, AC charger, flexible antenna, PC interface cable, and detailed instructions.

D 2735

Uniden® **$529**



Yaesu VR-500 Multi-mode Scanner

The new VR-500 is more than just a scanning receiver, it's more like a miniature high performance monitoring station! Providing almost continuous coverage of the 100kHz to 1300MHz range, the VR-500 includes reception of narrowband FM, wideband FM (for FM and TV broadcast audio), SSB (for Amateur, CB, and HF reception), CW, and AM (for shortwave and broadcast station) signals. A large backlit LCD screen not only displays the receiver operating frequency, but also displays channel steps and reception mode. For monitoring band activity above and below your current listening frequency, the VR-500 even provides a 60 channel Bandscope to display local activity (within a range of 6MHz max when used with 100kHz steps). A total of 1091 memory channels are provided, with 1000 of these being "regular" memories with alpha-numeric tagging, and the balance being for special features (such as Search band memories, Preset channel memories, Dual Watch memories, and a Priority memory channel). A Smart Search™ function, which sweeps a band and finds in-use channels, allows you to allocate up to 41 memories that can automatically note these active frequencies. The VR-500 operates from just 2 x "AA" size alkaline batteries, and can be connected to an external 12V DC source (such as a vehicle cigarette lighter) using the optional E-DC-5 adaptor. For easier operation, the VR-500 can also be connected to your PC using the optional ADMS-3 interface/software package.

D 2799

YAESU **$699**

PowerHouse stores

A shopping experience like no other!

Dick Smith PowerHouse stores not only offer an expanded range of those original electronics products that have made our stores famous, but now you can experience the fun of using a wide range of communication equipment in our hands-on demonstration area.

Called the "Ham Shack", each PowerHouse store has a dedicated area where licensed staff can show you the latest Yaesu, Uniden, or Magellan communications and GPS products, as well as an expanded range of accessory lines that may not be available in other stores.

Not involved in Ham Radio? Staff can also advise on the installation of a CB radio for your four-wheel drive vehicle, how to get involved in listening to Shortwave radio stations from around the world, or assist you in the selection of a suitable accessory for an existing piece of equipment. For bushwalking or boating users, you can also find out about the latest in inexpensive satellite based navigation receivers or emergency beacons, or just browse through an extensive selection of communications related books.

The PowerHouse is also the place to go if you simply need a component to finish that weekend project, to buy tools, or just to while away a few hours while checking out our in-store technical books, library CD-ROMs, or our dedicated customer use Internet terminals.

With over 20,000 product lines in the electrical, computer, and communications areas, our new PowerHouse stores get the wavelength right!

1890 DPS/spot col

DON'T MISS THE ACTION!

Economy Soldering Station

Affordable quality for the technician or enthusiast. This new soldering station provides variable temperature control from approx. 250°C to 450°C, plus zero voltage crossing circuitry for low noise operation. While not a sensor-compensated temperature-controlled design, it is suitable for a wide range of soldering applications. It features a lightweight soldering pencil with heat-resistant cable, iron holder and a tip cleaning sponge, and is full Energy Authority approved. Supplied with a long- life 1.6mm plated tip.

T 1975

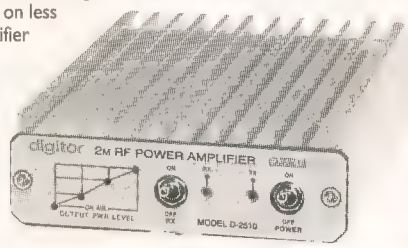
$78

Digitor 2m 30W RF Power Amplifier

If you use your 2m band FM handheld at home or in the car, but find that 2-3W RF output isn't enough for reliable communications, then this compact 30W RF amplifier may be the answer. It works with inputs from 0.5 to 5W and produces up to 30W output with just 3W input. A switchable 12-15dB gain low-noise GaAs FET receiver pre-amplifier can be selected for improved receiver performance on less sensitive hand-helds when being used in RF quiet areas. The amplifier offers a large heatsink for extended duty-cycle transmissions, fused DC power lead, and SO-239 input/output connectors. Frequency range 144-148MHz, FM only. Size: 100 x 36 x 175mm(WHD).

D 2510

digitor **$99.90**

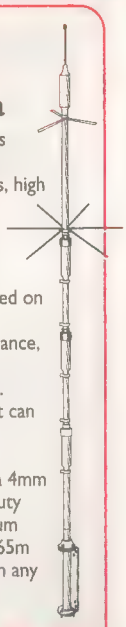


Rugged HF 5-Band Trap Vertical Antenna

The rugged 5BTV incorporates Hustler's exclusive trap design (25mm solid fibreglass formers, high tolerance trap covers and low-loss windings) for accurate trap resonance with 1kW PEP power handling. Wide-band coverage is provided on the 10, 15, 20, and 40m bands (SWR typically 1.15:1 at resonance, <2:1 SWR at band edges), and 80kHz bandwidth on 80m. An optional 30m resonator kit can be installed without affecting operation of other bands. High strength aluminium and a 4mm (wall thickness) extra heavy-duty base section guarantee optimum mechanical stability. At just 7.65m long, the 5BTV can be fed with any length of 50 Ohm coax cable.

D 4920

HUSTLER **$425**



Yaesu FT-90R 2m/70cm micro mobile

Another engineering breakthrough from Yaesu – a tiny-dual band mobile rig with high power output, a remoteable front panel, and a rugged receiver front-end. The FT-90R provides 50W RF output on the 2m band as well as 35W output on the 70cm band, a solid die-cast casing with microprocessor controlled cooling fan for reliable operation, and a large back-lit LCD screen, all in a package measuring just 100mm x 30mm x 138mm.

Also includes:

- Wide dynamic range receiver for greatly reduced pager breakthrough.
- Huge receiver coverage – 100-230, 300-530, 810-999.975MHz (Cellular blocked).
- 180 memories and a variety of scanning functions.
- Built-in CTCSS encode/decode, battery voltage metering.
- Designed for 1200 and 9600 baud packet operation.
- Tiny remoteable front panel (requires optional YSK-90 separation kit)
- Includes MH-42 hand mic, DC power lead, and easy to follow instructions.

D 3312 **2 YEAR WARRANTY**

AMAZING VALUE!

$699

YAESU

YSK-90 Front Panel Separation Kit D 3317 **$132**

PHONE FAX AND MAIL ORDERS

direct link

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FAX: **(02) 9395 1155** within Australia and **(+612) 9395 1155** from outside Australia

Visit our web site at http://www.dse.com.au

MAIL: DICK SMITH ELECTRONICS, Direct Link, Reply Paid 160, PO Box 321, North Ryde NSW 1670 (No stamp required)

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14 Day Money Back Guaranteed if NOT completely satisfied. (Software excluded)

DICK SMITH ELECTRONICS

That's where you go!

Yaesu transceivers and accessories stocked in selected stores only. Other stores can place orders on a deposit-paid basis. Offers expire 31/12/2000. All prices shown are inclusive of GST.

1890 DPS/spot col

Division Directory

The Amateur Radio Service exists for the purpose of self training, intercommunication and technical investigation. It is carried out by amateurs who are duly authorised people interested in radio technique solely with a personal aim and without pecuniary interest.

The Wireless Institute of Australia represents the interests of all radio amateurs throughout Australia. National representation is handled by the executive office under council direction. One councillor for each of the seven Divisions. This directory lists all the Divisional offices, broadcasts schedules and subscription rates. All enquiries should be directed to your local Division.

VK1 Division Australian Capital Territory,
GPO Box 600, Canberra ACT 2601

President	Gilbert Hughes	VK1GH
Secretary	Peter Kloppenburg	VK1CPK
Treasurer	Ernie Hosking	VK1LK

VK2 Division News South Wales
109 Wigram St, Parramatta NSW
(PO Box 1066, Parramatta 2124)
(Office hours Mon-Fri 1100-1400)
Phone 02 9689 2417
Web: *http://www.ozemail.com.au/~vk2wi*
Freecall 1800 817 644
e-mail: *vk2wi@ozemail.com.au*
Fax 02 9633 1525

President	Michael Corbin	VK2YC
Secretary	Barry White	VK2AAB
Treasurer	Pat Leeper	VK2JPA

VK3 Division Victoria
40G Victory Boulevard Ashburton VIC 3147
(Office hours Tue & Thur 0930-1500)
Phone 03 9885 9261
Web: *http://www.tbsa.com.au/~wiavic/*
Fax 03 9885 9298
e-mail: *wiavic@alphalink.com.au*

President	Jim Linton	VK3PC
CEO	Barry Wilton	VK3XV
Secretary	Peter Mill	VK3APO

VK4 Division Queensland
GPO Box 638 Brisbane QLD 4001
Phone 07 3221 9377
e-mail: *office@wiaq.powerup.com.au*
Fax 07 3266 4929
Web: *http://www.wia.org.au/vk4*

President	Colin Gladstone	VK4ACG
Secretary	David Jones	VK4OF
Treasurer	Bill McDermott	VK4AZM
Office Mgr	John Stevens	VK4AFS

VK5 Division South Australia and Northern Territory
(GPO Box 1234 Adelaide SA 5001)
Phone 08 8294 2992
web:*http://www.sant.wia.org.au*

President	Jim McLachlan	VK5NB
Secretary	David Minchin	VK5KK
Treasurer	John Butler	VK5NX

VK6 Division Western Australia
PO Box 10 West Perth WA 6872
Phone 08 9351 8873
Web: *http://www.omen.net.au./~vk6wia/*
e-mail: *vk6wia@omen.net.au*

President	Neil Penfold	VK6NE
Secretary	Christine Bastin	VK6ZLZ
Treasurer	Bruce Hedland-Thomas	VK6OO

VK7 Division Tasmania
PO Box 371 Hobart TAS 7001
Phone 03 6234 3553 (BH)
Web: *http://www.tased.edu.au/tasonline/vk7wia*
also through *http:/www.wis.org.au/vk7*
email: *batesjw@netspace.net.au*

President	Phil Corby	VK7ZAX
Secretary	John Bates	VK7RT
Treasurer	John Bates	VK7RT

Broadcast schedules

All frequencies MHz. All times are local.

VK1WI: 3.590 LSB, 146.950 FM each Sunday evening from 8.00pm local time. The broadcast text is available on packet, on Internet *aus.radio.amateur.misc* news group, and on the VK1 Home Page http://www.vk1.wia.ampr.org

Annual Membership Fees. Full $77.00 Pensioner or student $63.00. Without *Amateur Radio* $49.00

From VK2WI 1.845, 3.595, 7.146*, 10.125, 14.160, 24.950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (* morning only) with relays to some of 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday at 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2 m, 70 cm, 23 cm. The broadcast text is available on the Internet newsgroup *aus.radio.amateur.misc*, and on packet radio.

Annual Membership Fees. Full $78.00 Pensioner or student $61.00. Without *Amateur Radio* $47.00

VK3BWI broadcasts on the 1st and 3rd Sunday of the month at 8.00pm. Primary frequencies, 3.615 LSB, 7.085 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM(R)s VK3ROU 438.225, and VK3RMU 438.075. Major news under call VK3ZWI on Victorian packet BBS and WIA VIC Web Site.

Annual Membership Fees. Full $78.00 Pensioner or student $61.00. Without *Amateur Radio* $47.00

VK4WIA broadcasts on 1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 10.135 MHz SSB, 14.342 MHz SSB, 21.175 MHz SSB, 28.400 MHz SSB, 29.660 MHz FM (rptr), 147.000 MHz, and 438.525 MHz (in the Brisbane region, and on regional VHF/UHF repeaters) at 0900 hrs K every Sunday morning. QNEWS is repeated Monday evenings, at 19.30 hrs K, on 3.605 MHz SSB and 147.000 MHz FM. On Sunday evenings, at 18.45 hrs K on 3.605SSB and 147.000 FM, a repeat of the previous week's edition of QNEWS is broadcast. Broadcast news in text form on packet is available under WIAQ@VKNET. QNEWS Text and real audio files available from the web site

Annual Membership Fees. Full $85.00 Pensioner or student $72.00. Without *Amateur Radio* $56.00

VK5WI: 1827 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.700 FM Mid North, 146.800 FM Mildura, 146.825 FM Barossa Valley, 146.900 FM South East, 146.925 FM Central North, 147.825 FM Gawler, 438.425 FM Barossa Valley, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 USB, 7.065 USB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. 3.585 MHz and 146.675 MHz FM Adelaide, 1930 hrs Monday.

Annual Membership Fees. Full $77.00 Pensioner or student $63.00. Without *Amateur Radio* $49.00

VK6WIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz, Country relays 3.582, 147.200 (R) Cataby, 147.350 (R) Busselton, 146.900 (R) Mt William (Bunbury).147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz : country relays on 146.900,147.000, 147.200, 147.250 and 147.350 MHz..Also in "Real Audio" format from the VK6 WIA website

Annual Membership Fees. Full $69.00 Pensioner or student $59.00. Without *Amateur Radio* $38.00

VK7WI: 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.625 (VK7RMD), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart), repeated Tues 3.590 at 1930 hrs.

Annual Membership Fees. Full $88.00 Pensioner or student $75.00. Without *Amateur Radio* $55.00

VK8 Northern Territory (part of the VK5 Division and relays broadcasts from VK5 as shown, received on 14 or 28 MHz).

VK1 Notes

Forward Bias

Peter Kloppenburg VK1CPK

The Education section of the ACT Division can now look back over a year of setting up classes for aspiring radio amateurs, providing tuition in Theory, for both Novice and AOCP, Morse, and Regulations. The exam pass rate through the year was on the average 95%. The exams were held at the Hughes Community Centre in all of these subjects, for a total of 31 candidates. Given the success rate, the Division will continue with the classes next year, beginning on Wednesday, February 7, 2000.

The new Call book for 2001 has arrived! The new edition contains the listings for almost 16,000 amateur radio stations, plus very useful information such as constantly referred to reference data, accredited examiners list, band plans, repeater and beacon list, and DXCC countries listing. From January onwards, members can get a copy at the monthly meetings. Price will be $20, when collected in person.

Foxhunts are on again in the ACT. If you are interested, give Neil Pickford (VK1KNP) a call on 6258 7803 at home, or use his URL neil.pickford@aph.gov.au for detailed information.

The Division has received an offer from the Scouts to share their facilities at Farrer. It is there where a partly used building is available for setting up classes, meetings, a radio station, and training facilities. Negotiations are underway regarding building access, security, tenure and other important aspects such as siting of antennas, cable runs, electricity and phone usage, etc, etc. At this stage we are hopeful that sometime in February the Division may have a permanent facility for its activities.

The Division has become the proud owner of two beam type antennas. One is a Hy-gain TH6-DXX "Thunderbird", a six-element, 3-band antenna. The other a Hy-gain HF Log Periodic 7 element beam for the 13 to 30 MHz bands. Both of these antennas will be put up at the facility in Farrer, when it becomes available to us. The TH6 was bought from Thomas Mann, a local radio amateur, and the log periodic was a donation from the Swedish Ambassy in Yarralumla

In September, the WICEN State Coordinator, Phil Longworth (VK1ZPL), arranged for a mailout to all potential participants of organised WICEN exercises. Over 100 letters were send out to amateurs who had participated in the past, or who were likely, if asked well in advance of the event(s). More than 15 replies were received in response to the mailout, all of whom were keen to join in the exercises.

Lastly, it is with regret that we mention the passing of Dr Thomas Olin Rhymes (VK1BUD). Tom was well known in the amateur radio fraternity around Canberra and in Academic circles. He will be missed by many of us.

The next General Meeting will be held on January 22, 2000 at Room 1, Griffin Centre, Civic, Canberra City, at 8.00 pm.

VK2 Notes

by Pat Leeper VK2JPA
patleep@bigpond.com

Well, the festive season is upon us and the Division would like to wish all members the very best for the holiday period. We hope you receive all those little gifts that make amateur radio such a great hobby.

A final reminder that clubs and individual members can apply to use the AX2000 callsign until the end of the year. It is available in one week blocks and dates can be obtained by ringing the Divisional office. The last week of the year is already booked by the Hunter Brach Group who are intent with finishing the year with a big effort.

By the time you read this, the Conference of Clubs will have been held at Amateur Radio House. These meetings are held twice a year to discuss agenda items from the clubs that are intended to bring to the Council's attention matters needing action. Your club can have a say – this feedback helps make the Council of your Division aware of your concerns and action to be taken.

The Divisional Office will be closing for the holidays on Friday 22 December. The January date for resuming business has not been finalised as the November Council meeting was put back a week to coincide with the Conference of Clubs. As you will see in the new call book, the office is no longer open on Wednesdays, but the telephone is diverted to one of the Councillors for your convenience.

But -- don't forget -- if you have any queries or gripes about the way your Division is running matters -- Let us know! Ring, fax or email the Division as per the Divisional page in AR. Country members can use the free call line.

That's all for this month from the VK2 Division.

VK3 Notes

By Jim Linton VK3PC

End of year

The WIA Victoria Office will close for the year on 19 December and reopen on Tuesday, February 6, 2001. Next year it is proposed that the office will only be open on Tuesdays

Although the office is not open during the holiday season, the Treasurer, Secetary and President will be busy during this time with matters relating to annual reports and auditor requirements.

Correspondence including member applications and membership changes will also be handled during the office closure.

The annual general meeting to be held in May, on a date yet to be advised, after the venue is confirmed and annual report requirements completed. Members are advised that any Notices of Motion for the AGM close with the Secretary at Noon on 27 February, 2001.

May I take this opportunity of behalf of the WIA Victoria Council of wishing all members the compliments of the festive season.

Sandbagging anti-WIA pair on a WIA Victoria two-metre repeater early one morning we heard a couple of radio amateurs making outrageous and mischievious claims about the WIA. One of the themes was that the WIA had resisted reducing the Morse code amateur licence test speeds. The logic to back up this claim was that because the WIA runs the exams it wanted to keep the Morse tests going as a revenue source. But the ACA forced it to change its policy on the code. This is absolute rubbish. Exams are hardly a source of revenue for the WIA and the fees do not cover the true costs of the exam service. I wondered at the time how many others were listening, and perhaps believed the pair as they bagged the WIA about a range of issues.

A few days later I checked out their callsigns on the WIA Victoria membership database, and was not surprised to find they did not appear on the list.

WIA Victoria Tel: 9885 9261 40G Victory Boulevard Fax: 9885 9298 Ashburton 3147

Office Hours: Tuesday & Thursday 10.00am to 2.30pm VK3BWI broadcast 1st/3rd Sunday at 2000 hours.

Web site: www.tbsa.com.au/~wiavic Email wiavic@alphalink.com.au

IARU Region III information page - www.tbsa.com.au/~wiavic/iaru

VK4 Notes

By Alistair Elrick VK4MV

GPS Stash

VK4's first APRS/GPS stash hunt is on right now in SE VK4 and has been set up by Brian VK4BBS. You need to take your GPS gear to the locations given then search for the "treasure". ALWAYS leave "another" treasure when you take from the stash and sign the logbook also with the stash.

Simple as this! Park your car at 27.38.30 South, 153.04.12 East. The Stash is located at 27.38.34 South, 153.04.37 East.

Weird And Wonderful

This from a recent Qnews broadcast sounds like a great idea for field days and Hamfests.

How often have we been told, "You Radio Hams are MAD... always collecting old junk and building things". Well now you can tell the YL it might make you "rich and famous".

Lock Harry the gadget man, Prof. Miller, Mad Max, and the Monty Python crew in your shack and you'd end up with something close to Junkyard Wars, a televised "engineering entertainment" contest that features strange schemes, odd teams, incredible machines, and lots and lots of duct tape.

In the US it's called Junkyard Wars, in the UK, Scrapheap Challenge. The show takes two teams of gearheads, puts them into a junkyard and gives them 10 hours to create the biggest, fastest, or strongest whatchamacallit with whatever parts they manage to scrounge up.

Well how about a donated pile of junk with the challenge for competitors to make something that works from it during a Hamfest or Field day, could be a great spectator event.

Vk4 Area Special Interest Groups - Radio Scouting

JOTA 2000 went very well in the north of the State with Guide and Scout groups participating in ARDF, Slow Scan TV, Packet Radio (which a lot of them called "the Internet"), disassembly of electronic apparatus, local interstate and international voice contacts. Two groups also deployed 70MHz "LIPD's" to maintain on-demand contact. Stations were set up in Guide and Scout halls, out in the bush at Guide and Scout Camps and even in portable situations under canvas.

Comment Highlights:

AX4SBW: Open Address, It Makes a First! All received here ok! AX4GGF: this is the first year we have heard the opening properly! Received well by 130 girls making up 6 to 7 guide groups with some girls travelling from Ingham and Bowen to participate. AX2XTJ: opening ceremony received nice and clear here at the den. Our scouts are very active on the radio.

AX4PVH: Signals received well here on the beach, 15 scouts in attendance. AX4SCK: Rebroadcast received on handheld and piped to PA amp so 80 joeys/cubs/scouts/venturers could hear the opening in its entirety for the first time. VK4FUQ: transmission quality good. K4SKL: transmission received well at Selheim.

Feedbacks from group leaders so far are that the kids enjoyed themselves immensely and are ready to roll again in 2001. JOTA coordinators in the region remind group operators to dispatch notes about their operation for inclusion in the state JOTA report.

Stephen Watson VK4SGW the National Co-ordinator, JOTA/JOTI through Scouts Australia, sends thanks

to all the JOTA Operators. You can feel deservedly proud of your efforts, which will remain with Youth Members as an important and memorable part of their young lives. I hope that you can share JOTA/JOTI again on the 20th and 21st of October 2001.

Dalby QNews Interrupted

Mike VK4XT says it appears that with the addition of an extra repeater belonging to the Queensland Emergency Services on Mt Kiangarow, the home of the Dalby Amateur repeaters, the Ham services have suffered. The Amateur setup, connected to the same power supply as QES, closes down at low voltage, the extra drain on the system, by the additional repeater saw this happen last weekend, slap bang in the middle of QNEWS.

Seems some 30 ft + cabling is a bit much for the power supply! But when the sun is shining we bounce back! The panels charge at some 25 amps to a battery that is about 2 feet high and has some 500-amphour capacity.

TREC soon to have a 70cm repeater

A 70cm repeater will be soon operational on the Atherton Tablelands, initially in test mode from Hallorans Hill and then possibly permanently located at Bones Knob which should give good coverage into the Mareeba and Atherton Tableland area. Frequency will be 439.500 Tx / 434.500 Rx.

TREC wishes to thank the WIAQ Office Manager John Stevens, VK4AFS for his help with this project, as without John's technical expertise this project would not have seen the light of day.

73's from Alistair

VK7 Notes "QRM"

Good news – Tasmanian Amateurs are going to be better off!!. Our Divisional Council has decided on a fee decrease of $3.00. per annum for each grade of membership. Last year the Council was faced with a lot of questions on finance due to many upcoming changes. "Playing safe" we felt was the right thing to do but by careful financial management and also a federal component decrease we reckon that we can still be viable with fees of :-

F grade $85.00, G grade 72.00, and X grade $52.00.

Two of our DX stalwarts , Barry VK7BE and Al, VK7AN recently went on an IOTA safari to Flinders Island, logged thousands of calls, had a "wow of a time" and now are planning another to the newly IOTA listed King Island. We look forward to another good report.

Both the north-west and northern branches enjoyed near record attendances at their November meetings. In the northwest a visit was made to the "Minecom" headquarters in Devonport. This small company is doing business all over the world supplying underground communications and (in co-operation with the CSIRO) developing safety programmes for mining companies. They also supply UHF controlled video street surveillance system for Councils. Tasmanian expertise to the for !.

The northern branch had a very good dinner meeting followed by an illustrated lecture on our solar system by the resident astronomer at the Launceston museum. He held his audience spellbound for two hours with amazing pictures of solar system space exploration and then explained the "leonid meteor" phenomenon visable each mid-November.

The "Challenge 2000" car rally had the usual assistance of the north-west branch members for communications and 17 members, xyl's etc. spread themselves over the whole northwest area doing a really professional job. We must congratulate Phil Harbeck, VK7PU on his brilliant organizing.

Cheers for now and a Happy Christmas to all from your Tasmanian pals.

Ron. VK7RN

Silent Key

Doug Parish VK7AZ

Tasmania lost one of its grand old men recently with the passing of VK7AZ, well known worldwide from his avid DXing.

He put himself on the map with one of the most impressive antenna arrays one could find anywhere at his Bellerive home. He put himself into the news when he lowered one of them into the high tension hydro lines running past his home, putting the whole suburb off power and destroying everything that was connected to a powerpoint in the house!

Careless? No, you see Doug was blind and for the most part erected and maintained his antennas personally. With beams on all bands from 40 metres up, he put a big signal around the world.

Not only did he build, maintain and operate his amateur station himself, he also built and crewed a large fishing boat and was active in the fisherman's union area.

He owned several boats, including a yacht, which he, with a little help from his friends, raced successfully on the Derwent.

Nothing came easily but nothing seemed to daunt him. His wife, Edna, who had been his "eyes" for so many years later became blind herself, and Edna's untimely death a few years ago meant that Doug had to leave his beloved "shack" in Bellerive and live in a retirement home. His health deteriorated until he finally became a silent key in early Novenber at the age of 79.

Doug determined to prove that "nothing is impossible" and Doug, you proved it!

Vale, Mate.

AMSAT

Bill Magnusson VK3JT

Pictures from UO-36 available from the Internet

Even if you do not have the facility for direct downloading of the high speed digital data from UO-36, you can still explore the fantastic images that this satellite is producing almost daily.

Rob, VK3KOS has re-activated his site on the world-wide-web. The address is http://www.geocities.com/vk3kos/dload/. A visit to this site is worth considering if you are curious to see what this satellite imaging business is all about.

You will be presented with a menu system that will allow you to browse through all the archived files. They are listed in groups, each group being a complete set of files that go to make up an 'image-set'. Each image set consists of a number of 'thumbnail images' and a number of compressed image files. The thumbnails are identified by their extender (.imt) and the compressed files (.imc). As is the practice when direct downloading from the satellite, it is a good idea to download the thumbnails first and then after viewing them, decide which of the larger compressed image files to download.

A word of warning though. Don't expect to open these images with your favourite picture viewer. They are in Surrey's own format. In order to be able to view the thumbnails or image files you will need the latest version of Colin Hurst's 'CCD Display 2000' program. This is available for download from the AMSAT-NA web site, http://www.amsat.org.

Good luck and good viewing. Remember, those of you who enjoy a challenge, these images are available now from UO-36, and soon from TiungSat-1 at a download rate of 38k4 using broadcast protocol and it's faster than my dial-up ISP download rate using TCP/IP.

The image sets on Rob's website are just an example of the wide range available direct from UO-36. So having whetted your appetite, what about making a few station improvements to get it working on the high speed digital birds. You can also explore the archived files of TMSAT (TO-31) images at the Surrey website. If you point your web-browser to http://www.sstl.co.uk/primages/remote_sensing/Processed/ you will find a directory containing heaps of images from the TMSAT spacecraft. These images have already been processed into jpeg format so any of the common viewers will open them. You do not require the CCD-Display program to view these images. The jpeg compression detracts slightly from the image quality so the results are not quite as spectacular as the direct downloads from TMSAT.

When Chris Jackson returns from his current sojourn of satellite launching he has promised to make another site available for archiving the UO-36 images. These are much more detailed as they exploit the advantages of high speed downloads available on UO-36. The resolution of UO-36's cameras is better than those on TO-31 and the detail in the pictures is amazing. But the price you pay is in file size. One image I downloaded recently of the Tokyo docklands area came out as a .BMP image of over 13 megabytes!

Many thanks to Rob VK3KOS for making his site available for storage of the raw UO-36 files. A visit to either of these sites will hopefully show you what this satellite imaging business is about and perhaps plant the spark of an idea to set up a download station of your own. Baud rates are set to increase in the near future and speeds of up to 116k are mooted. So as I said earlier, if you love a challenge, gird up your loins and become part of this exciting facet of amateur radio.

Phase 3D Launch Date Set

Word has finally been received that Phase 3D will be launched on board Arianespace Flight 135. The time of launch has been set at 01:07 UTC, Wednesday 15th November (which will be a few days after the deadline for this column). Phase 3D will be launched with three other satellites, the large PAS-1R communications satellite and the smaller STRV-1C and 1D satellites. All four are to be placed in geostationary transfer orbit. Flight 135 is set to be a record-setting Ariane 5 mission, marking the first use of the ASAP-5, a platform that will enable the Ariane 5 launcher to carry auxiliary micro and mini satellite payloads. Arianne 5 will be lifting 6200 kg into geostationary transfer orbit. This includes the mass of the PAS-1R primary payload and the three auxiliary satellites including Phase 3D as well as the weight of the ASAP-5 platform itself and the other payload mounting and interface hardware. If all goes well, Phase 3D will be in orbit and in its commissioning mode when you read this column. Please be patient as the orbit positioning and refining is a tedious, time consuming process requiring lots of very precise work by

The AMSAT group in Australia

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an email mailing list for breaking news and such things as software releases. Members use the AMSAT-Australia HF net as a forum.

AMSAT-Australia HF net.

The net meets formally on the second Sunday evening of the month. In winter (end of March until the end of October) the net meets on 3.685 MHz at 1000utc with early check-ins at 0945utc. In summer (end of October until end of March) the net meets on 7.068 MHz at 0900utc with early check-ins at 0845utc. All communication regarding AMSAT-Australia matters can be addressed to:

AMSAT-VK,
GPO Box 2141, Adelaide, SA. 5001.
Graham's email address is: vk5agr@amsat.org

the control stations. Rest assured, its transponders and beacons will be turned on as soon as possible. Potential users are advised to watch the AMSAT web site for the latest news or better still, to subscribe to the ANS news service. This can be done via the web site. The latest AMSAT news will then be delivered to your email address.

Telemetry Format Documentation Released for Phase 3D

It will be very important that as many stations as possible monitor the telemetry steam from Phase 3D in the early days. The format is the same as Oscar-13, ie. 400 baud PSK. You will need a suitable demodulator and software to display the engineering data. The most popular demodulator is that designed and produced by James Miller G3RUH. It is available in finished form or kit form. Some of the current batch of DSP demodulators can be configured to deal with the telemetry. Software has been developed and should be available from the AMSAT-NA web site in time for the launch. Known as P3T, it was written by W4SM. It is a Windows 95/98/NT/2000 "telemetry-only" version of P3TC as used by command stations. The telemetry document is a 60 kilobytes long text file and is available for download from the AMSAT-Germany web site at http://www.amsat-dl.org/p3d/tlmspec.txt. It's well worth reading.

First Permanent Crew now Resident Aboard ISS

ISS is now permanently occupied. The crew includes expedition commander/U.S. astronaut Bill Shepherd, KD5GSL, Soyuz vehicle commander/Russian cosmonaut Yuri Gidzenko, and flight engineer/cosmonaut Sergei Krikalev, U5MIR. Not a bad start to have two out of three of the inaugural crew with amateur radio callsigns.

Amateur radio activity had not started at the time of writing this column. The ARISS initial station gear is now temporarily stowed aboard the Functional Cargo Block module of ISS. The initial station will use an existing antenna that will be adapted to support 2-metre FM voice and packet. The ARISS equipment will get a more-permanent home aboard the Service Module in 2001, along with VHF and UHF antennas. Plans call for amateur TV, both slow scan and fast scan ATV, a digipeater and relay stations. The Expedition-1 crew's activities are being scheduled around a UTC timeframe. It's expected that their working day will start around 08:00 UTC and end somewhere near 19:00 hours with a lunch break near 12:00 UTC. This means we will have to revise our possible operating times from those we knew on MIR that worked on Moscow time. When the daily routine of the occupants becomes more established we should expect activity in the hour or so before they start work for the day, perhaps during their lunch break but more realistically during their "evening" recreation time. The crew will also have most weekends off, from about mid-Saturday until the end of their day on Sunday. The proposed frequencies for the initial operations are:

- Worldwide packet uplink 145.990 MHz
- Region 1 voice uplink 145.200 MHz
- Region 2/3 voice uplink 144.490 MHz
- Worldwide downlink for voice and packet: 145.800 MHz
- TNC callsign will be RZ3DZR when operations begin but could change soon after.

TiungSat-1 Opens for Business

At the time of preparation of this material Tiungsat-1 had successfully survived its commissioning and the PacSat BBS had been turned on. The startup was in 9600 baud mode but a move to 38k4 baud is expected before long. As is the case with UO-36 its prime function will be Earth imaging. If UO-36 is any indication we can look forward to more spectacular images from TiungSat-1. It is yet to be allotted an "OSCAR" number.

*Instant*TRACK ver. 1.5 is now available from AMSAT-Australia.

Graham VK5AGR has advised that he can supply copies of the updated version 1.5 of the old faithful *Instant*TRACK program. If you own a licensed version of IT V1.0 and can provide the registration number, then an upgrade for AMSAT members is available for a donation of $20. A first time copy of IT V1.50 is available to AMSAT members for a donation of $30 or $50 for non-members. For this exercise you are deemed an AMSAT member if you subscribed to the AMSAT-Australia newsletter before its demise earlier this year or are currently a member of AMSAT-NA. If you send your donation by cheque or money order made payable to AMSAT-Australia GPO Box 2141 Adelaide S.A. 5001, Graham will email you a copy of the software. *Instant*TRACK version 1.5 has a number of improvements and many new features including:

- More video modes supported (CGA, HGC, EGA, VGA, and up)
- Very fast computers supported
- Year 2000 (Y2K) fixes
- Configuration items to match your system
- Easier Keplerian elements file input
- Support for automated Keplerian elements updates
- Ephemeris table output to a file or printer
- Improved accuracy for the Moon
- More ways to control the real-time screens
- Ground track displays
- Visual magnitude displays
- More control over timezones
- More consistent user interface
- Configuration items to match your personal preferences

This new updated version has been keenly awaited by many people. It brings a sadly outdated old friend right up to date so it can cope with modern hardware and modern methodology. Now is your opportunity to obtain a copy. For those who prefer the QuickTrack program, version 5.0 of this software is also available to AMSAT members for a donation of $25 or $40 for non-members.

Hopefully the big news next month will be the successful launch of the long-awaited Phase 3D satellite. It is still scheduled for launch just a few days after the deadline for this copy.

Education Notes

Brenda M Edmonds VK3KT
PO Box 445 Blackburn Vic 3130

Christmas Greetings and Best Wishes for 2001 to all readers.

This will be the last issue of Amateur Radio for the 20th century. This means that it is now 90 years since the foundation in Sydney of the organisation which has become the Wireless Institute of Australia. In 2010 we will celebrate our centenary, if there is still a Wireless Institute of Australia.

Radio (or Wireless) has evolved considerably since 1910, both in the technical and the social aspects. But perhaps it has now passed its peak of activity and influence. Other interests and hobbies have supplanted radio in many minds. We have all seen how absorbed the young people have become in computer games, CDs, the Internet and television, and it is not only the young. Is there room or time left for the dedication and commitment required to obtain an amateur licence?

To obtain an amateur licence indeed requires a commitment. For those starting with no background in physics or electricity, there is a vast amount of theory to be learned and understood, and a massive amount of regulations to assimilate, even without the Morse code. Most courses allow about six months of one-night-a-week classes to cover the novice syllabus. It is possible to cover the course without help, but that makes it much harder.

The amount of material to be covered in a course has expanded considerably over recent years. It has been elaborated and specified since the days when "a knowledge of basic radio theory" was the total syllabus. In particular, the course for Novice Amateur Operators Certificate of Proficiency, which was introduced nearly thirty years age as a simpler entry path to the hobby, has been extended as Novices have been granted extra privileges. This means that the gap between the standards required for the two levels of certificate has become smaller, as has the gap between the two levels of operating privileges. To return to the original difference in standards, there are two possibilities:

1. Make the AOCP a higher standard by including more on "state of the art" technology; or
2. Return the NAOCP to an appropriate level by reducing the knowledge required.

If we wish to continue to attract new amateurs to the hobby, the first alternative is not acceptable. If we do not continue to attract new amateurs, the hobby will die out as the present population ages. It may well be time for a careful review of the whole examination and syllabus situation. I will be interested to receive any comments on this idea.

Once again, Season's Greetings and best wishes to all.

Silent Key

Ronald "Graham" Clayton, VK4BGC (1921 -2000)

Graham passed away on the 3rd March 2000, finally succumbing, after a courageous battle with the many complaints and ailments which assailed him in later life. With each setback he would pick himself up and bravely announce that he hadn't yet reached his 'used by date'. Thanks to the love, support and care given by his wife Beverley, VK4NBC, together they managed to stretch out the years of their married life.

They drove all the way to Perth and back to enjoy the ALARA Meet in 1996 and only last year Graham was able to share, with satisfaction and pride, the success of the 1999 ALARA Meet in Brisbane, which Bev convened.

Graham was born on the 21st October 1921 at Mount Gambier, South Australia, one of four children, born of Olive and Horace Clayton.

At the age of 18 Graham joined the RAAF and served as a Wireless Operator Gunner in the South West Pacific area from 1939 to 1945. During the war years, Graham still found time to court and marry his first wife Gwen, who sadly passed away in 1979. They had four children, Robert, Terry, Shame and John. There are ten grandchildren.

Graham met Bev in Singapore, while in transit from Europe. Bev was also in transit from Singapore to Hong Kong. A friendship started when they became acquainted on a bus tour of Singapore. They were re-acquainted in Brisbane and married in 1981. Graham had a distinguished Air Force career. After graduating from No. 1 WAGS at Ballarat and No. 1 BAGS at Evans Head as a sergeant WAG, Graham travelled overseas to Kenya, where he crewed up at No.70 OTU. In 1942 he joined 60 Sqdn Blenheims. Operating out of India and Burma, Graham completed 64 sorties for a total of 325 op hours. He then moved on to Dakotas with 74 Sqdn, adding a further 164 sorties to his tally and another 500 op hours to his Log.

Returning to Australia, he joined No.34 Internal Transport Sqdn based at Parafield. Graham was commissioned in 1943 and discharged in 1945, with the rank of Flying Officer.

In civvy life Graham was a Flight Service Officer with the Department of Civil Aviation. He had a job which had much in common with his hobby of Amateur Radio, so he was a lucky man.

Graham joined the Air Forces Amateur Radio Net and held the position of Secretary for several years. With Bev as Treasurer they made a great team.

On behalf of all the members of AFARN I extend to Bev and family our deepest sympathy at the loss of a good man and a good friend to all who knew him. He will be sadly missed.

Roy Mahoney VK4BAY
President AFARN

AR Awards

John Kelleher VK3DP, Federal Awards Officer
4 Brook Crescent, Box Hill South Vic 3128 (03) 9889 8393

It is with great pride and pleasure that I humbly announce my tenth year as your Federal Awards Manager. From the beginning, the road to success was sometimes very bumpy, as you can assume I was a new broom in the organization. I found that I had to bone up on DXCC in all it's forms as well as fitting myself out with all the necessary electronic gear to produce this monthly copy. All the existing files had to be reshaped to produce the bi-annual DXCC listings. I must admit that it was a monumental task. I was working a 16 hour day until finally, everything took shape.Now I can answer all requests in a matter of minutes, even though I have not computerized all the necessary information.

The fees for all WIA awards were raised from $5 to $10 almost 12 months ago, but I am still receiving applications with the lower fee included. This is very obviously not enough as postage rates have ballooned to a point where dispatch of awards in tubes is roughly seven dollars US. Therefore, I am working at a disadvantage. Bear in mind also that this operation is carried out on a totally voluntary basis, which I am pleased to do, as I am providing a service to our members, as well as non-members, and overseas applicants.

To date, the following awards have been issued.

WAVKCA-HF	2168
WAVKCA – VHF	50
Antarctic	20
WAS VHF	197
Grid Square	25
Havkca	181
VHFCC	127
DXCC-Phone	459
DXCC-CW	167
DXCC-Open	283
DXCC-RTTY	7

Not bad, when you consider that all this has been carried out by one person, as previous Awards Managers will verify.

CZECH REPUBLIC. Czech Radio Club Programme

General requirements. Fee for all awards is 10 IRC or US$5.00. Endorsement fee is 2 IRC or US$1.00, and indicate number and issue date of basic award. Send cards unless GCR from National level Society has confirmed possession. List for P75P must contain locations of listed stations. Apply to :-

Czech Radio Club
Awards Manager
PO Box 69
113 27 Praha 1
Czech Republic.

S6S-Worked Six Continents

Work and confirm contacts with at least one station located in each of the six continents since Jan 1 1950. All CW, all Phone, all RTTY, all SSTV. Endorsement stickers for basic certificate are available for 80, 40, 20, 15 and 10 metres.

P75P-Worked 75 Zones

Work and confirm contacts with at least one station located in 50 different ITU zones since Jan 1 1960. Endorsements for 60 and 70 zones. SWL OK.

100 – CSWorked 100 Czech Stations

Work and confirm contacts with at least 100 OK/OL stations since Jan 1 1993. Issued for mixed-mode, all CW, all phone, all 160m, all VHF or SWL. Endorsements available for each additional 100 up to 500.

OK DX Award

Contact at least 40 different Czech counties during the annual OK/OM DX contest held every year during the second week in November.

OM DX Award

Contact at least 15 different Slovak counties during contacts as above.

Logs for the two above awards go to Contest Sponsor :-

Karel KarmasinOK2FD
Gen Svobody 636
674 01Trebic
Czech Republic.

SLOVAKIA Slovak Association of R.A. Series

General requirements. All bands and modes except as indicated. No repeater contacts. SWLs may earn award under same conditions as categories as shown. GCR list and fee of US$7.00 or 10 IRC to:

Mr Milan Horvath OM3CDN
Lopenicka 23
83102Bratislava
Slovakia.

Diplom Slovakia.

Issued by the Slovak Association of Radio Amateurs in HF and VHF categories for contacts with Slovak stations after Jan 1 1993 as follows:

HF Shortwave

Slovak stations:	10 different OM, 3 from Bratislava.
Europeans:	3 different OM, 2 from Bratislava
DX:	3 different OM, 1 from Bratislava

VHF Category

Slovak stations:	5 different OM 2 from Bratislava
Europeans:	3 different OM 1 from Bratislava
DX:	1 QSO with an OM station.

OM3KAB and OM9HQ counts as two QSOs.

Bratislava Award

Bratislava, the Capital of the Slovak Republic celebrated its 2000th anniversary of its founding in 1991. This permanent award is available to all amateurs and SWL's for contacting Bratislava stations since Jan 1 1991. Slovak stations need 10 different, Europeans need 5, DX need 3. All bands, including repeaters.

Slovak Century Club Awards

Contact at least 100 different Slovak stations (OM prefix) after Jan 1 1993. SWL OK. Contacts must have been made from same country. All bands and modes. Separate certificates for :multi-band/multi-mode, multi-band/single-mode, single-band/multi-mode, single-band/single-mode, and 5 band in either multi or single mode. Separate certificates issued for each successive 100 stations.

Old Timers Club Award.

This award is issued for contacting at least 3 different old-timers in the Republic of Slovakia. SWL OK. No band

or mode restrictions. A list of eligible stations available from manager for SASE/IRC. GCR list and fee of DM10 to:-

Vilo Kuspal OM3MB
Sumracna17
SK-821 02
Bratislava,Slovakia

SLOVENIA - Twin Towns Award.

Sponsored by the MariborARC to publicise it's written agreement and friendship with the 7 towns of Maribor (S5), Kraljevo (YU), Greenwich (G), Marburg/Lahn (DL), Szombathely (HA1), Udine (IV3), and Graz (OE6). For the purposes of this award, only the geographic area has to be worked, not the specific town, except that Europeans need two (2) QSO's from any of the towns , and others need just one (1). The remaining contacts need be made with the call districts noted above: YU S5 G-London County, DL DOK- F, HA1 IV3 and OE6. Contacts after Jan 1 1986. Handsome multi-colour award displays coats of arms of the towns. Send list of contacts and US$4.00 or 10 IRC to :-

Award Manager
Radio Club Maribor
PP12 62001
Maribor
Slovenia.

South Africa

General requirements. GCR rule applies. Awards are free to SARL members, fees for all others are 10 Irc, US$4, or R2,00. Apply to :-

Awards Manager
South African Radio League
PO Box 807
Houghton 2041
South Africa.

All Africa Award

Contact 34 different areas in Africa. One contact each with areas 1 to 9 is mandatory, plus any 25 additional ones from the list below. Land stations only, no islands around Africa. Contacts may be with past or present prefixes, but not both.

AREA	PREFIX	COUNTRY
1	ZS1	South Africa
2	ZS2	South Africa
3	ZS3/V51	Namibia
4	ZS4	South Africa
5	ZS5	South Africa
6	ZS6	South Africa
7	ZS9/A2	Botswana
8	ZD5/ZS7/3D6/3DA0	Swaziland
9	ZS8/7P8	Lesotho
10	H5/S4/S8/V9	Bophutatswana/Ciskei/Transkei/Venda
11	7X	Algeria
12	D2/3	Angola
13	ST	Sudan
14	9Q5	Zaire
	9U5	Burundi
	9X5	Rwanda
15	6O/T5	Somalia
16	TJ	Cameroon
17	SU	Egypt
18	ET3	Ethiopia
19	TL8	Cent.African Republic
	TN8	Congo
	TR8	Gabon
	TT8	Chad
20	CN	Morocco
21	FL8/J2	Djibouti
22	TU	Ivory Coast
	TY	Benin
	TZ	Mali
	XT2	Birkina Fasso
23	5T5	Mauretania
	6W6/8	Senegal
	5U7	Niger
	3X	Guinea
	3C	Equatorial Guinea
24	ZD6/C5	The Gambia
25	ZD4/9G1	Ghana
26	5Z4	Kenya
27	EL/5L	Liberia
28	5A	Libya
29	C8/9	Mozambique
30	ZD2/5N2	Nigeria
31	9J2	Zambia
32	ZD6/7Q7	Malawi
33	J5	Guinea-Bissau
34	ZD1/9L1	Sierra Leone
35	ZE/Z2	Zimbabwe
36	EA9/S0	West'n Sahara
37	5H3	Tanzania
38	3V8	Tunisia
39	5V4	Togo
40	5X5	Uganda

Best of good luck es 73 de John, VK3DP.

Everything else can wait.

Get on air today!

Contest Calendar December 2000 – February 2001

Dec	2/3	TARA RTTY Sprint		
Dec	2/3	EA DX Contest	(CW)	
Dec	9/10	ARRL 10 Metres Contest	(CW/SSB)	
Dec	9/10	SWL 10 Metres Contest		
Dec	16	OK DX RTTY Contest		
Dec	16/17	Croatian CW Contest		
Dec	16/17	International Naval Contest	(CW/SSB)	
Dec	17	RAC Canada Contest	(CW/SSB)	
Dec	26	Ross Hull Memorial VHF-UHF Contest	(to 14 Jan)	(Dec 00)
Dec	30/31	Original QRP Contest	(CW)	
Dec	30/31	Stew Perry 160 metres Distance Challenge	(CW)	
Dec	31/1	15th Internet CW Sprint	(CW)	
Jan	1	ARRL Straight Key Night	(CW)	
Jan	6/7	ARRL RTTY Roundup (Digital)		
Jan	12-14	Japan International DX Contest Low-bands		
Jan	12/14	Summer UHF/VHF Contest		(Dec 00)
Jan	14	Ross Hull Memorial Contest last day		
Jan	20	LZ Open Contest	(CW)	
Jan	21	HA DX Contest	(CW)	
Jan	26-28	CQ WW 160 Metres Contest	(CW)	
Jan	27/28	REF (France) DX Contest (Dec 00)	(CW)	
Jan	27/28	UBA DX Contest	(SSB)	
Feb	3/4	Mexican RTTY Contest	(RTTY)	
Feb	10/11	WW RTTY WPX Contest	(RTTY)	
Feb	10/11	PACC Contest	(CW/SSB)	
Feb	10	Asia-Pacific Stprint	(CW)	
Feb	10/11	RSGB 160 Metres Contest	(CW)	
Feb	17/18	ARRL DX Contest	(CW)	
Feb	23-25	CQ WW 160 Metres Contest	(SSB)	
Feb	24/25	REF (France) DX Contest	(SSB)	(Dec 00)
Feb	24/25	UBA DX Contest	(CW)	
Feb	24/25	RSGB 7 KHz Contest	(CW)	
Feb	25	High Speed Club Contest	(CW)	

Information this month from K7RAT VK6VZ REF UBA LA9HW7

We must congratulate Steve Ireland VK6VZ, who is a dedicated 160 metres operator. Steve won the Stew Perry 160 Metres Challenge for 1999, something that has never happened to any operator in the Southern Hemisphere before.

This event is a challenge rather than a contest, as it is held around Christmas and therefore has to cope with high levels of noise, requires honest reports (not automatic 599s from computer programs), scores points for distances between stations and has bonuses for low power operation.

Steve was lucky enough to get some very good propagation into North America in the last four hours of the contest, working 80 stations out of 111 QSOs and scoring a total of 3,480 points. His nearest American rival was KH7R with 3073 points.

Steve says that in 1998 he was 71st, in 1997 19th and "the great thing about the contest – almost anyone can win from anywhere in the world if they get some good conditions".

A magnificent effort, Steve VK6VZ, and sincere congratulations. Anyone wishing to see the rules for this year may find them at http://jzap.com/k7rat/stew.rules.txt

VHF Time Again

All amateurs are asked to get involved in the Ross Hull Memorial Contest at Christmas, and the Summer VHF Field Day in January. See Calendar for details.

Interesting Comment

A note from David VK2AYD points out that for the Commonwealth Contest this year the majority of logs was received in paper format, something that militates against the cry of many pundits that computer logging programs have replaced older methods.

NOTE: Ian Godsil, now ex-VK3DID, has ceased to be Federal Contests Co-ordinator. Anyone interested in assisting with this task is asked to contact Mr John Loftus VK4EMM on e-mail: John_Loftus@vettweb.net.au

A job specification is included in this issue on page 3.

Results ANARTS RTTY Contest 2000

From Jim VK2BQS and Colin VK2CTD

(VKs only Place\call\score\award)

3	AX2000	21,558,600	Ist VK2
5	VK4UC	16,195,020	1st VK4
11	VK6GOM	8,929,998	1st VK6
71	VK2SG	1,257,360	2nd VK2
129	VK2BQS	348,950	3rd VK2

10-10 International

We have all heard of the 10-10 International Club. Apparently there are some VK and ZL operators who are active in the club's contests, eg: VK2FHN 111 points Spring CW Contest; VK3AFM 176 points, VK6PP 44 points and VK3MRG 42 points in Winter Phone Contest;VK2FHN 92 points in 1999 Autumn CW Contest;VK2FHN 404 points, VK3AFM 153 points and VK6PP 42 points in 1999 Day Sprint; VK2FHN 91 points in 1999 Sprint CW QSO Party. Many thanks to Phil VK2FHN for drawing attention to these results.

Ross Hull Memorial VHF-UHF Contest 2000 - 2001

from John Martin VK3KWA Contest Manager

In recent years six metre scores have been only a small fraction of what can be obtained on two metres and higher bands. This imbalance has been reduced by an adjustment to the six metre scoring. However the main source of big scores will still be two metres.

The contest has two sections - best seven days and best two days. This means that you can fit your contest activity around other commitments; but please try to get on the air for as many days as possible!

The Contest

The WIA maintains a perpetual trophy in honour of the late Ross Hull and his pioneering efforts in VHF and UHF operation. The contest is open to all amateurs.

Duration

0000 UTC Tuesday, 26 December 2000 to 2400 UTC Sunday, 14 January, 2001

Sections

A. Best seven UTC days as nominated by the entrant;

B. Best two UTC days.

Entrants may submit logs for either section. The nominated UTC days need not be consecutive. Overall winner will be the top scorer in Section A. If the overall winner has also entered Section B, his/her log will be excluded from Section B.

One callsign and one operator per station. One contact per station per band per UTC day. Repeater, satellite and crossband contacts are not permitted. No contest operation below 50.150 MHz. Band plan calling frequencies should not be used for contest calls, exchanges, or liaison. A contest calling frequency of .150 on each band is suggested. All rulings of the Contest Manager will be accepted as final.

Penalties

Minor errors in distance estimates or calculations may be corrected and the score adjusted. Contacts made on calling frequencies will be credited if the entrant provides a satisfactory explanation of why it was not practical to move to another frequency. Otherwise such contacts will be disallowed. Persistent unnecessary use of calling frequencies or false log entries will lead to disqualification.

RS (RST) reports plaus a serial number.

Serial numbers need not be consecutive. For difficult propagation modes such as meteor scatter, exchange of a total of two digits is sufficient for a valid contact.

Scoring

For two metres and above, one point per 100 km or part thereof (ie up to 99 km: one point; 100 - 199 km: two points, etc). For six metres only, contacts below 1000 km as above. For contacts from 1000 km to 2400 km, two points regardless of distance. Contacts over 2400 km, 20 points regardless of distance.

Band multipliers are:

6m	2m	70cm	23cm	higher
x1	x3	x5	x8	x10

Logs

Logs must cover the full contest period and contain the following for each contact

- Date and UTC time
- Station location (if operating portable)
- Specific FREQUENCY (not just band) and callsign of station worked
- Approximate location or grid locator of station worked
- Reports and serial numbers sent and received
- Estimate of distance worked and points claimed.

Separate scoring columns for each band would be helpful.

Logs must be supplied with a cover sheet containing:

- Operator's callsign, name and address
- Station location (if different from postal address)
- Section(s) entered, and a list of UTC days to be scored
- A scoring table
- A signed declaration that the station has been operating in accordance with the rules and spirit of the contest, and that the Contest Manager's ruling will be accepted as final.

Deadline

Paper logs may be posted to the Manager, Ross Hull Contest, 3 Vernal Avenue, Mitcham, 3132. Electronic logs can be sent by e-mail to: jmartin@xcel.net.au in any of the following formats: ASCII text; Office97

RTF, DOC, XLS, MDB or PUB; WORKS99 WKS. If you use Office2000, please save files in Office97 format.

Logs must be received by FRIDAY, 9 FEBRUARY, 2001. Early logs would be appreciated.

Note on Calculating Distances

Absolute accuracy is not required. All you need to know is whether the other station is above or below the nearest multiple of 100 km. An easy method is to use a compass to draw 100 km circles around your location on a map. Better estimates can be made from six-digit Maidenhead Locators using a computer program which is available from the Contest Manager.

REF (France) DX Contest

CW: 27/28 January, 2001

SSB: 24/25 Febraury, 2001

0600 z Saturday to 1800z Sunday

Object: to work as many French stations as possible once per band. Callsigns are: F FG FH FJ FM FO FP FR FS FT FW FY TK TM TO TP2CE

Classes: Single operator; multi-operator one TX; SWL

Bands: 80 – 10 metres (no WARC)

Exchange: VKs send RS(T) plus serial number. French stations will send RS(T) plus own prefix.

Score: one point for QSO with station in same continent; all other QSOs three points.

Multipliers: on each band all departments, 00-99 and overseas prefixes.

Final score is sum of all QSO points X sum of all multipliers.

Send logs by mail by 15 March (CW) or 15 April (SSB) to: REF Contest, BP 7429, 370974 TOURS CEDEX (FRANCE). Logs may also be sent by e-mail to: concours@ref-union.org

Japan International DX Contest 2001

LF CW: 2200z 12 Jan - 2200z 14 Jan 2001

HF CW: 2300z 13 Apr - 2300z 15 Apr 2001

PHONE: 2300z 9 Nov - 2300z 11 Nov 2001

Object is to work as many JA stations + JD1 islands as possible.

Bands: LF CW 160/80/40; HF CW 20/15/10; Phone 80 - 10 (no WARC). **Categories:** Single operator single/multi-band high power (more than 100w o/p); single operator single/multi-band low power (less than 100w o/p); multi-operator; maritime mobile.

General: Operate for maximum of 30 hours only and show rest periods in log; single op must perform all tasks himself; multi-op must remain on band for at least 10 minutes and during this time multi-op may transmit on another band only if new station is multiplier; ops may use spotting networks.

Exchange: RST plus CQ Zone number. JAs will send RST plus Prefecture number (01 - 50).

Score on 160m four points; 80m two points; 40/20/15m one point; 10m two points.

Multiplier is total JA prefectures + JD1 islands worked (possible 50 per band).

Final Score: multiply total points by total multipliers.

Logs (one per callsign) must show times in UTC; exchanges; multiplier first time worked; duplicate QSOs shown as no points; rest periods clearly marked; use separate sheet for each band.

Send Logs and summary sheet to: JIDX Contest, c/o Five-Nine Magazine, PO Box 59, Kamata, Tokyo 144, Japan, by 28 Feb, 31 May or 31 Dec. Logs may be submitted on 3.5 inch disk in ASCII with summary sheet, or by e-mail. For instructions send e-mail to <jidx-info@ne.nal.go.jp> with command #get jidxlog.eng or #get jidxlog.jpn

SUMMER VHF-UHF FIELD DAY 2001

John Martin (VK3KWA), contest manager

The next Summer VHF-UHF Field Day will take place on January 13 and 14, 2001. The rules are the same as for the Spring Field Day in November 2000. Please note a minor change in the definition of portable stations under "General Rules".

Duration

VK6 only: 0400 UTC Saturday January 13 to 0400 UTC Sunday January 14, 2001. All other call areas: 0100 UTC Saturday to 0100 UTC Sunday.

Sections

A: Portable station, single operator, 24 hours.

B: Portable station, single operator, any 6 consecutive hours.

C: Portable station, multiple operator, 24 hours.

D: Home station, 24 hours.

Single operator stations may enter both Section A and Section B. If the winner of Section A has also entered Section B, his log will be excluded from Section B.

If two operators set up a joint station, they may enter Section C under a single callsign, or sections A/B under separate callsigns. Stations with more than two operators must enter Section C.

General Rules

One callsign per station. Operators of stations in Section C may not make contest exchanges using callsigns other than the club or group callsign. Operation may be from any location, or from more than one location. You may work stations within your own locator square.

A station is portable only if all of its equipment, including antennas, is transported to a location which is not the normal operating location of any amateur station.

Repeater, satellite and crossband contacts are not permitted. No contest operation is allowed below 50.150 MHz. Recognised DX calling frequencies must not be used for any contest activity. Suggested procedure is to call on .150 on each band, and QSY up.

Contest Exchange

RS (or RST) reports, a serial number, and your four digit Maidenhead locator.

Repeat Contacts

Stations may be worked again on each band after three hours. If the station is moved to a new locator square, repeat contacts may be made immediately. If the station moves back into the previous locator square, the three hour limit still applies to stations worked from that square.

Scoring

For each band, score 10 points for each square in which your station operates, plus 10 points for each locator square worked, plus 1 point per contact. Multiply the total by the band multiplier as follows:

6 m	2 m	70 cm	23 cm	Higher
x 1	x 3	x 5	x 8	x 10

Then total the scores for all bands.

Sample Scoring Table

Band	QSO Points	Locator Pts	Multiplier	Total
6 m	100	+ 200	x 1	= 300
2 m	60	+ 120	x 3	= 540
etc.				
Overall Total				**= 840**

Logs

For each contact: UTC time, frequency, station worked, serial numbers and locator numbers exchanged, points claimed.

The front sheet should contain the names and callsigns of all operators; postal address; station location and Maidenhead locator; the section entered; a scoring table; and a signed declaration that the contest manager's decision will be accepted as final.

Entries

Paper logs may be posted to the Manager, Spring VHF-UHF Field Day, 3 Vernal Avenue, Mitcham, Vic 3132. Electronic logs can be e-mailed to jmartin@xcel.net.au. The following formats are acceptable: ASCII text, Office 97 RTF, DOC, XLS, MDB, or PUB, or Works 99 WKS. If you use Office 2000, please save the files in Office 97 format.

Logs must be received by Friday, February 9, 2001. Early logs would be appreciated.

Pounding Brass

S.P. Smith VK2SPS
4/6 Taranto Rd, Marsfield NSW 2122
(H) 02 9876 8264 (M) 0419 602 520

Early power generation

This month a look at two forms of early power generation as used by telegraphers, these are the "Edison-Lalande Cell" a modification of the Leclanche Cell and the "Fuller Cell" one in which you might not be aware of.

Other forms of power generations were the Cloride of Silver Cell and Gravity Cell as mentioned in an earlier issue.

Edison-Lalande Cell

This type of cell consists of a zinc plate and a copper oxide plate (commonly referred to as a block). The solution of the cell is oxide of potassium, or caustic potash dissolved in water, both plates are suspended from the cover of the cell.

Polarization is prevented by the decomposition of water of the solution, the oxygen of the water combining with the zinc to form oxide of zinc, which in turn combines with the potash to form an exceedingly soluble double salt of zinc and potash.

Hydrogen liberated from the water combines with the oxygen of the copper oxide, reforming water and depositing pure metallic copper.

E.M.F is about .98v and dropping to about .75v when in use. Internal resistance of the cell is about .025 ohms which drops after a few hours of use.

Fuller Cell

This type of cell was commonly used in Telegraphy where large currents were required.

This type of cell consisted of a zinc and carbon plate. The zinc plate is cone shaped and placed within a porous cup containing a solution of diluted sulphuric acid. The other plate, that is carbon is positioned outside the porous cup but within a glass jar. The carbon plate is placed in a solution of bichromate of potash, water and sulphuric acid. The solution was commonly known as "Electropoison". Two ounces of mercury was added to the bottom of the porous cup for the purpose of amalgamating the zinc, which works by capillary action.

As the zinc becomes decomposed during normal operation the impure particles of the amalgam become detached and fall to the bottom of the cell. The sulphuric acid (the supply of which passes from the outer solution into the porous cup), attacks the zinc, which forms sulphate of zinc and setting free hydrogen; polarization being prevented by the combination of the hydrogen thus set free with oxygen of the bichromate of potash.

E.M.F is about 2.029v with an internal resistance of about .5 ohms which varies with the size of the plates, normally decreasing as plates get larger to within reason of construction. This type of cell will normally last between 4-6 months and will require very little attention if not worked to full potential.

A good technician can tell the condition of the cell by its colour.

1) A working cell will be orange in colour due to the bichromate crystals.
2) A Bluish tint – additional crystals required.
3) Should the cell become inoperative but retain its orange colour – sulphuric acid is required.
4) Should the cell become inoperative and become very bright – replace cell.

I hope everybody has a great Christmas and a safe and happy new year.

Next month a technical look at telegraph equipment, mainline sounders, box relays and pony relays. See you next month.

Stephen P. Smith VK2SPS

Ref: *American Telegraphy & Encyclopedia of the Telegraph by William Maver Jr - Chap 2.*

Silent Key

VK5ZCF Grenville Sawyer

Rob Duncan VK5ZIK
Secretary WICEN SA Inc

It is with deep regret that I have to inform members of the passing away of Glenville Sawyer VK5ZCF in the early hours of Sunday morning (August 6th).

Glen was buried in his WICEN uniform, and WICEN provided a guard of honour as a mark of respect for all of Glen's efforts on behalf of WICEN. It was good to see so many members in uniform at the funeral.

DX Notes

Ross Christie, VK3WAC
19 Browns Road, Montrose 3765, Vic.
Email Vk3wac@aol.com

Reviving a hot topic

After my comments last month I have received a few letters of encouragement and appreciation. It's good to know that these notes are appreciated by at least some of the readers. One letter in particular from Les, VK4DA, was gratefully received. He had some nice comments and a short list of some great DX stations that he has worked recently. Details later. Les mentions that he has never used a 'DX Net' to work a DX station, preferring to 'go it alone'. I must admit to having checked into the 'ANZA Net' to work a few rare ones. What do others think of the idea of participating in 'DX Nets' to bag that rare station? This used to be a hot topic many years ago, I wonder if the ideas of the DX community have changed over the years.

There has been a bit of bad news on the DXpedition front this month. Unfortunately the planned DXpedition to Agalega, 3B6RF, has had to be postponed for a couple of weeks due to a change of government in Mauritius. This will pose a bit of a problem for the organisers as transport to the island being limited to two ships per year, one in October and the other in May. Obviously a delay of a couple of weeks will cause them to miss their original operating dates. More news later to the new date, those on the net can visit their website at http://www.agalega2000.ch for more news. Hopefully something will be worked out.

The DX

4N8/LZ1BJ, Kosovo. Boyan, LZ1BJ reports he will be working in Kosovo for the next several months and will operate as 4N8/LZ1BJ on SSB and CW. QSL via LZ1BJ either direct (Boytcho Hadshiyski, P.O. Box 90, 2500 Kyustendil, Bulgaria) or via the bureau. [TNX 425 DX News]

5T, Burundi. Yannick, F6YD is heading to Nouakchott, Mauritania for six months, maybe longer. He hopes to be active on all HF bands on SSB. QSL via home call. [TNX F6AJA, Les Nouvelles DX and 425 DX News]

6Y, Jamaica. Ron, 4S7RO, will be active on the air with the call 4S7RO/6Y5. He expects to be in Kingston, Jamaica for the next two years. Equipment and some other problems have prevented Ron from getting fully setup, however he is working to overcome all this and hopes to be on the air soon. He plans to be active mainly on 20 metres SSB and CW. As space is tight he does not anticipate any activity on 160 and 80 metres. Ron's wife, VU2MAB, will also be active from 6Y5 shortly. QSL info is not clear yet, but cards should not be sent to Franz, DJ9ZB, as this route is only good for Ron's past 4S7 activities. [TNX 425 DX News]

9X, Rwanda. Charlie, N4XT, will be working at the U.S. Embassy in Kigali in the year 2001 between the 12th January and 12th March. He hopes to be able to squeeze in some activity from this African nation. [TNX The 59(9) DX Report and OPDX]

A5, Bhutan. Jani, 9M6US and Charly, K4VUD will be active from Bhutan from the 1st to the 9th of December. They have obtained permission to run 1kW on all bands. Antennas will be a triband beam and wire antennas and possibly a beam for the WARC bands if they can make some repairs. Charly will operate as A52UD on SSB and CW with an emphasis on the low bands, while Jani plans to operate on RTTY as well. QSL requests for A52UD go to K4VUD, preferably direct. Jani will announce his QSL address and policy separately. [TNX K4VUD and 425 DX News]

A9, Bahrain. Gus, K4SXT, is now set up and ready to go in Bahrain, A9. He expects to obtain his license (hopefully A92ZE) around the 14th of October. Gus has erected an HF2-V 40 feet up and just 50 feet from the Arabian Gulf. This should provide a reasonably good a take off for his signals. Expect to see big signals from him on 40, 80 and 160 metres. [TNX The Daily DX]

EP, Iran. Mac, W3HC, has received an email from Iran informing him that there will be seven stations set up for the "Civilization Talks". Look for the old timers EP2FM, EP2CM and EP2ES and 4 new novices to be active. On October 10th, Hamid/EP3HR and his friend Yar/EP3SP opened their club station EP4PTT. This club is working with a license from Ministry of Post and Telephone of Iran. This club will only be active on 14 MHz as their equipment is all homebrew. Their antenna is a dipole and the output power is only 20 watts. QSL via the Iranian Bureau. [TNX W3HC and OPDX]

HC1, Equador. Rick, NE8Z, plans to be active as HC1MD from Ecuador again. This trip he expects to be active from HC2, HC3, HC6 and HC7 from the 25th of November till the 11th of December. Rick will be operating on 40-10 metres CW and SSB running 500 watts, and on 6 metres with 10 watts. QSL via K8LJG, John Kroll, 3528 Craig Drive, Flint, MI 48506, USA. [TNX NE8Z and 425 DX News]

HC, Equador. Otto, UA4WAE, informs us that he has been QRT since 30th of August. This was when he relocated to Ecuador. He will be there and operating as HC2/UA4WAE for at least the next two years. QSLs should be requested direct via Alex Otto Ogorodov, Correo Central, Salinas-Guayas, Ecuador, or by e-mail (UA4WAE@qsl.net). [TNX 425 DX News]

J2, Djibouti. Patrick, J28LP, is now active from Djibouti and will be there for the next 2 years. He will be operating only on 10 metres. QSL via F8UNF. [TNX The Daily DX]

SV/A, Mount Athos. Monk Apollo will be on air with the special callsign SY2A from now until the end of the year. QSL via his CBA (call book address) of SV2ASP. [TNX The DX News Letter and The Daily DX]

TT, Chad. Christian, FH/TU5AX is now active as TT8DX from Moundou, Chad. He is active on all bands from 80 - 6 metres, SSB. He will be in Chad until the end of 2001. QSL via F5OGL either

direct to Didier A. Senmartin, BAS - P.O. Box 19, 35998 Rennes Armees, France, or through the French bureau. [TNX F5OGL and 425 DX News]

ZK2, Niue Island. Bill, W7TVF, will once again be active from Niue Island as ZK2VF from the 19th of November until the 19th of December. Bill hopes to be active on all bands, 160 – 6 metres. Bill will pay particular attention to Europe, Africa and South America on the low bands during periods of grayline propagation. QSL via W7TVF, Bill Dawson, P.O. Box 4049, Pahrump, Nevada 89061, USA. [TNX The Daily DX]

Jim Neiger, N6TJ, will activate his ZD8Z call from Ascension Island from the 21st of November to the 9th of December. He will also be entering a single band 10 metre operation in the CQ WW CW DX Contest. Before and after the contest, Jim will be active on all HF bands on CW and SSB. All QSLs should go via VE3HO via his call book address (CBA) U.S. return stamps are O.K.

Bert, KC4/WA1O, is heading back to Antarctica. He will be there from the 1st of November until the 15th of January. Bert is a researcher with the International Trans Antarctic Scientific Expedition (ITASE). He will use a TS-50 barefoot with wire antennas. Science is the main reason for the trip but he hopes to manage to get on the air most days even if for short periods. QSL via KA1CRP. [TNX The Daily DX]

IOTA Activity

EU 027, Bear Island and EU 063, Hopen Island. Off to the windy wastes is Per, LA3FL, who is expecting to start a six-month work contract with the North Norwegian Weather Bureau on Bear Island and Hopen Island. His stint will commence on the 17th of November. Per will stay on Bear Island (EU-027) for three months. The island has a population of just 9. In January Per will move to Hopen Island (EU-063) which has an even lower population, only 4. He will be returning home in May 2001. Plans are to pack a small rig along for the trip. His call will be JW3FL. Operations will take place during his spare time away from his official duties. [TNX The Daily DX]

AS 013, 8Q, Maldives. Kurt, DF4XX and Holger, DL5XAT will be active on all bands 160-6 metres. Mode will be mainly CW. The call will be 8Q7TX from the Maldives (AS-013). They intend to be active from the 21st of November till the 3rd of December. Participation in the CQ WW CW DX Contest as 8Q7WW is also planned. QSL via DL5XAT. [TNX DL5XAT and 425 DX News]

OC 129, Guimeras Island, DU. John, G3IZM be active (on 20 and 15 metres SSB and CW) as DU7/G3IZM from Guimeras Island in the Visayan Group (OC-129) between 19 December and 5 January. QSL to home call. [TNX G3SWH and 425 DX News]

OC 009, T8, Palau. Kenji Fujihara, JI3DLI plans to be active on all bands 40 - 6 metres on SSB, CW, RTTY and FM. His call will be T88DX from Palau (OC-009). Activity will take place between the 2nd to the 5th of January 2001. QSL via JI3DLI. [TNX 425 DX News]

OC New. Members of the Surabaya City Club Station YB3ZES will be active from Madura Island, Java coastal islands (OC-NEW) starting from October 21, 2000 using the special call 8A3B. The license issued is good for 1 year, but for the first operation they will only last for 2 days. They plan to operate for 2 or 3 days out of every month until October 2001. Plans are to be mainly QRV on 15 and 20 metres on SSB, CW and RTTY. They will also try PSK31and SSTV later in the operation. QSL is direct to P.O. Box 4025, Surabaya 60401, INDONESIA. [TNX The Daily DX]

NA 005, VP9, Bermuda. Mark, AA1AC will be active as AA1AC/VP9 from Hamilton Parish, Bermuda (IOTA NA-005) from the 8th till the 12th of December 2000. Operation will be on all HF bands (10-80 metres) CW and SSB. He will also be operating in the ARRL 10-metre contest. QSL via AA1AC. [TNX AA1AC and 425 DX News]

AF 006, VQ9, Diego Garcia. Patrick, W3PO (ex F6DWY) will be active (on all bands, but mainly CW) as VQ9PO from Diego Garcia (AF-006) starting on the 30th of October until February 2001. QSL via W3PO. [TNX The Daily DX and 425 DX News]

EU 063, JW, Prins Karls Forland. Terje, LA3OHA/JW3OHA and a group of others are in the advanced stages of planning an operation from Prins Karls Forland (EU-063). They are aiming at operating between the 31st of May and the 10th of June 2001. They are still looking for members to join the team. If interested, please visit http://www.dxpedition.org [TNX LA3OHA and 425 DX News]

Special Events

The special prefixes 4D68 (individuals) and DZ68 (for club stations) are being used in the Philippines to celebrate the 68th anniversary of the Philippine Amateur Radio Association, Inc. [TNX The Daily DX]

SP, Poland. The special event stations SP2000S (SP-two thousand-S) and SN2000C (SN-two thousand-C) will be active on all bands and modes until 31 December 2000 to celebrate the new millennium. QSL route for SP2000S is via SP5ZCC and QSL route for SN2000C is via SP9PKZ. [TNX SP5UAF, SP9XWD and 425 DX News]

PC50, The Netherlands. The 15th of December will see the Radio Agency of The Netherlands celebrating the 50th anniversary of former intercontinental radio reception station "NERA". Amateur radio will be represented during the celebrations. In fact, the weekend before the official celebrations, Saturday and Sunday the 9th and 10th of December, a special event station will be on the air and manned by employees of the Radio Agency. They have applied for the callsign PC-50-N. This is the first time The Netherlands has authorised a callsign from this allocation block. Activity will be continuous 24hrs a day, propagation permitting, on CW, SSB or PSK31 on 70cm and 2m, and all pre-WARC HF bands (10, 15, 20, 40, 80 and 160 metres). A full size inverted vee dipole at 65m over excellent ground will be used for 160m. This should provide excellent signals to DX locations. Special QSL cards will be awarded for all QSOs. SWL reports will be answered too. All QSLs will be forwarded via the Buro. Reports can be sent via the bureau, direct or E-mailed. Send to Ben Witvliet, PA5BW c/o NERA, Radioweg 3, Nederhorst-den-Berg, The Netherlands. Send E-mails to: ben.witvliet@rdr.nl [TNX OPDX News Bulletin]

80 years ago, the first public radio broadcast in Germany took place on the 22nd December 1920. The station transmitted to air an instrumental concert 'The Koenigs Wusterhausen'. From the 1st to the 23rd of December the Club call DL0KWH will be active from the QTH of the old radio station using the special DOK (for DLD award) " 80 Radio ". " 80 Radio " is good for the DLD AWARD issued by the DARC. DL0KWH is good for the AWARD "Sender K=F6nigs Wusterhausen". The QSL card

will depict the area of the old radio station. For further details visit www.qsl.net/dl0kwh [TNX DL2VFR and OPDX News Bulletin]

DXpeditions

3B6 - The proposed DXpedition to Agalega, 3B6RF, from the 8th to 24th of October has been postponed until May 2001. A note from Hans Peter, HB9BXE explains "Our landing permit for Agalega was cancelled", "due to unexpected elections in Mauritius, which took place middle of September. Officials of the new Mauritius Government have asked us to postpone the expedition for 2 to 3 weeks for security reasons. This creates severe difficulties for us, as there are only two regular ships per year heading to 3B6. These run at the beginning of October and the other at the beginning of May." For the latest information on the DXpedition visit http://www.agalega2000.ch

3D2, CONWAY REEF (OC-112). Mats/5X1Z (SM7PKK) and Nils/SM6CAS have announced a DXpedition to Conway Reef in 2001. An international team consisting of operators Nils/SM6CAS, Mats/SM7PKK, Janne/SM0DJZ, Pekka/OH1RY, Siggi/TF3CW and Steve/G4EDG will be active between the 5th and the 24th of April 2001. Three of the operators have already been on Conway Reef, and the majority of team are well seasoned DXpeditioners. The team is also looking for 2 additional members (any takers from VK?) The DXpedition will consist of 4 complete stations running continuously 24 hours a day (one for 20, 15 and 10m SSB; one for 20, 15 and 10m CW; one for 40, 80 and 160m, RTTY and 6m; one for 30, 17 and 12m CW/SSB). All stations will have their own generators, linear amplifiers and Force 12 antennas. The main target of the DXpedition will be Europe but good coverage on all bands to all areas is expected. No callsign/callsigns have been mentioned yet but as soon as they are known they will be posted in the various media. Transport has already been organised in the form of a yacht suitable for the conditions and purpose. [TNX SM6CAS and 425 DX News]

3D2, CONWAY REEF (OC-112). Another DXpedition to Conway Reef is currently being planned by Hrane, YT1AD. Reports are that the operation is planned from the 5th to the 15th of February 2001. The following operators have been mentioned: YT1AD, YU1RL, YT6A, YU1NR, Z32AU (YU1AU) and Z32ZM and possibly one more operator from Central America. There will be three stations active at the same time each equipped with a 1KW amp. Each station will have two 3 element multiband beam antennas, one vertical and wire antennas for 160 metres. The callsign for the DXpedition will be announced on the 5th of Feb 2001. The licence for the operation has already been issued (October 5th, 2000). [TNX OPDX]

Round up

Les, VK4DA has sent me in a nice list of DX stations that he worked recently.

Call	Freq. kHz	UTC	QSL via
5X1P	14018	2130	G3MRC
KH0T	21016	0615	JA1SGU
T88NK	14002	2130	JA2AAU
8Q7AB	14004	2100	W7MP
TR8XX	14046	0700	Direct
ZP5KO	14021	0630	Direct
JY9NX	14017	0610	JH7FQK
CX3CY	21029	0030	Direct
TA3DD	21022	0620	KB2MS
CE0Y/JA3IG	21021	2340	JA3IG
5V7VJ	14027	0633	G4ZVJ
5H3NK	14024	0715	Direct

In DX Notes for November 2000 I reported 5R8O as a pirate operator who was using 5R8FL as a QSL manager. However, this is not the case. A recent report in The OPDX Bulletin has established that 5R8O is authentic. The operator is Albert whose QTH is Tananarive and QSL route is via 5R8FL. The information has been confirmed by Andreas, 5R8FL himself. This is good news for me as I can now confidently send off a QSL for my contact. [TNX OPDX]

Alain F5LMJ reports A50CDX is a pirate. Alain is receiving cards for A50CDX for contacts during the period of the 1st to 3rd of September 2001, but says this was definitely a pirate and not to waste your money. [TNX NA5G and 425 DX News]

And another, Gene, TZ6YV, reported hearing a station using the callsign TZ1GH who was advising people to QSL via the Bureau! According to Gene, the call TZ1GH has not been issued, and additionally Mali has no QSL Bureau. [TNX OPDX]

And yet another, someone is pirating VU2DED on CW. Please note that the genuine Ajay, VU2DED does not operate CW and has not been active on HF bands for a couple of years. [TNX VU2TRI]

The Daily DX carried a note from Abubaker, 5A1A, who reports that 5A1A is the only station active from Libya, officially. Any other 5A callsigns are pirates. Abubaker would like to enlist the help of any Amateur Radio operators that hear any pirate stations on the bands using any other 5A callsign. Anyone who hears a 5A station, other than 5A1A, are asked to send the relevant information to one of the following email addresses: assakerclub@hotmail.com, elzo71@yahoo.com or sanacat@netaddress.com. [TNX The Daily DX]

Sources

Again this month thanks and appreciation is extended to the following individuals and organisations. VU2TRI, NA5G, SM6CAS, HB9BXE, DL5XAT, LA3FL, N4XT, K4SXT, W3HC, NE8Z, UA4WAE, F5OGL, W7TVF, KC4/WA1O, The DX Newsletter, The OPDX Bulletin, 425 DX News Bulletin and The Daily DX.

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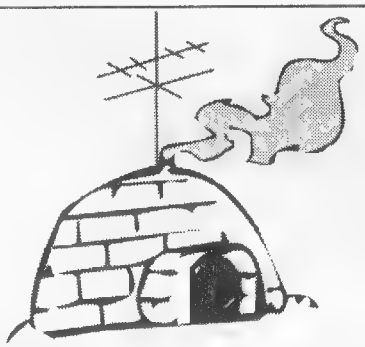
Spotlight on SWLing

Robin L. Harwood VK7RH.

Good listening on HF

The year 2000 is rapidly drawing to its conclusion. It has been very interesting listening over this period on the high frequency bands. For example, the formerly exclusive maritime allocations are not as crowded as they were only five years ago. There still is an active HF messaging system still operating under the aegis of Globe Wireless, which has bought the majority of the American HF coast stations,expanding worldwide through acquiring or leasing the remaining HF maritime telecommunications senders or leasing senders, establishing a worldwide network. They do still have SITOR but have developed a variation of PACTOR. The former mode, which is identical to the AMTOR mode, is very much on the way out. Very few hams are using it these days

There are a few remaining HF C/W operators such as the Cubans, Chinese, a few Italians and some Indonesians. I also have been informed that 9VG, Singapore Radio, will be completely leaving HF at the end of March 2001. I do expect that the maritime HF allocations will be pruned when the next WARC is convened. In the interim, there are plenty of illegal SSB operators quickly occupying the vacant channels.



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WIA Callbook 2001

OUT NOW

The 2001 edition of Passport to World Band Radio has been out since the end of October. This publication has taken over from the World Radio and Television Handbook for those interested primarily in listening to shortwave broadcasting stations. (The WRTH has become a directory of all radio and television broadcasters and production companies.) Larry Magne is the Executive Editor and is very helpful to the beginner or the more advanced listener. It also has very extensive reviews of former and current shortwave receivers. There is a frequency directory at the rear of the handbook, which is very handy in identifying stations and language blocks.

I obtained my copy direct from the publishers online and the price was $26:95 American postpaid. The price in Australian dollars will vary with the fluctuating exchange rate. I noted that this time around it was 10 dollars higher than last year. Australia' only surviving DX club submitted a bulk order and by now it may also be available in bookstores.

The ISBN number is 0-914941-51-8 and published by International Broadcasting Services Ltd. Their website is http://www.passband.com.

The Korean peninsula has remained divided since the outbreak of hostilities over 50 years ago. It is the one remaining legacy of the Cold War. Last year, the South Korean leader, Kim Dae-Jung, journeyed to the communist North to break the impasse and meet another Mr. Kim, Kim Jong- Ill. Since then, tensions have eased slightly with the American Secretary of State, Dr. Albright, also visiting Pyongyang.

A clandestine radio war has been ongoing and both sides of the Korean divide, have routinely been jamming each other. The North Koreans are on 3480,4120, 4440 and 4470 kHz although the audio may be difficult to hear, due to the southern bubble-jammers. Conversely the South Koreans also have clandestine broadcasters on 3880 kHz and one that is very easily heard around 6397 kHz. It moves around daily to avoid jamming. These stations are best heard from 1000 UTC.

The official Radio Pyongyang external service is on in English at 1300 UTC on 11335 kHz. It is very dry and boring, mostly with reports of meetings or seminars held to study the works of "the Great Leader" in remote corners of the Globe. Their announcers are not native English speakers judging by their pronunciation.

The South Koreans also broadcast in English at 0900 UTC on 9570 kHz. The future of the main transmitting site at Kimje is somewhat uncertain, as the antenna arrays are being replaced. Also some target areas may be dropped particularly Australasia.

Radio Japan also is coming very well on 21775 kHz from 0600 till 1100 UTC with their General Service in Japanese and English. They have moved from 21570 kHz and are the strongest signal on 13 metres.

Recently while tuning across the 49 metre band, I came across a very unusual station on 6165 kHz from 1100 UTC.

You may need to use USB because there is a strong VOA transmission in Chinese, emanating from the Philippines on 6160 kHz. The station is broadcasting from Vietnam and is a regional service in the Hmong dialect. What caught my attention was the haunting singing of the Hmong women.

This is in the first half-hour with the remaining half-hour being in Vietnamese. Incidentally Tasmania does have a small Hmong community and they often sell their vegetable produce at Hobart's Salamanca Market. They fled Southern Vietnam in 1975, settling in Tasmania.

Well that is all for 2000. It only remains for me to wish the Greetings of the Season to you and yours and hope that 2001 will be a good year for you.

73- Robin L. Harwood VK7RH.

AR VHF-UHF

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All times are in UTC

50 MHz Equinox comes and goes..

Unfortunately not much to report from the southern areas on Northern Hemisphere DX. There have been, however, some Sporadic E openings on 6m (and 2m as reported later) into most areas. What follows is a broad wrap up of the Spring Equinox. Neville VK2QF reports ... " Not much to report about six metres from this location but what has been lacking in quantity has be corrected by quality! Only two openings of note this season."

Oct 31st, 9A1CMS, I4SJZ, IW0RGN, S59RE, IZ5CMG, I4SJZ, EH3ADW [16,884km], IK5RLP, IW5BZQ, IK5QLO, IK5OEA, IK5YJY, IZ5EME, I4CIL, S59MA, I0AMU, IK0FTA, 9A3RE, I0WTD, I3LDS, IK4DRY, S52AB, I0JX, JA4MBM [hrd only], IZ2AAJ [hrd "JA only"], OM3LO, OM4FF, SP9CCD, OM3CM, SP9CCD, SQ9HYM, OE3WBA, IK2IQC, S59MA, IW2DMN, SP6OUL, OK1KT, IW2JMC, DL1DSW, S53X, IK2IQC, IV3ZOF, IK2OFO, SP9HWY, SP6GWB, IK2GSO, SP6GWB, DF3CB, VK8RAS/B [hrd], DL6UCW, DL9USA, SP6ASD, SP6GZZ/P, DJ2DA, DL6AMI, DL2HWA, DL1DTD, DL6AMI, DL3DXX, DL7AV, DK2EA, DJ3TF, OM3NY, from 0818 to 1013z, 315 deg beam heading and to 599+, 60 QSO's the largest opening ever on six from this location, with 9 entities worked, 62% CW the MAGIC MODE!.

Nov 7th, KC8CC, K7JE, K4ZOO [hrd], W7RV, W3ZZ [hrd], N3YDT, W3ZZ [15,832km], WE4N, KA8OHM, W4YV, WZ8D, WB8XX, KC2TX/7, W4TJ, K4ZOO, W4TJ, K4ZOO, W4TJ, N3II, N4MM, K4ZOO, KB4XK, W4MYA, W4MYA, NH6YK, JA2IGY/B [hrd], from 2038 to 2359z, 60deg beam heading to S9. States worked were Ohio, Virginia, Georgia, Arizona, California & Maryland [North of Washington D.C].

"Otherwise the band has shown a few TEP openings to Japan, Korea and Taiwan but not as frequently as expected so far. Sporadic E played a major role in most if not all of the openings especially the US where there was probably an extension at both ends." ... Neville VK2QF,

From Broome Bill VK6JQ reports .. "I have compiled a summary of Countries heard and worked during the last six months from daily records I keep of band conditions on 50 MHz." A total of 41 countries were heard with 25 countries worked as follows through the "winter" period —

APR	MAY	JUN	JUL	AUG	SEP
H44	JA	UR	SP	JA	JY
JA	9M2	EY	OH	BV	JA
EY	9N7	4W6	RU	YB	
5B4	KH6	UN	JA	9M0	
YB	W	DL	VR2		
KH6	V73	SP	EY		
FK8	I	9V1			
ZL	T88				
T88					
JY					
BV					

August was the quietest month, yet consulting another summary provided by Bill the band was open to JA for 23 out of 30 days during August! The multiple occurrences of European openings throughout June & July also perhaps indicate that we further south should look out for Es extensions well outside the traditional equinoxes. Thanks again Bill, VK6JQ.

Ray VK4BLK at Yeppoon reports an unusual event on 50 MHz on 28/29th of October 2000 ... "The band was dead and had been for the previous 48 hours.. even JA's and 49.750 MHz had gone so I set my rig scanning the DX portion of the band. At 0120Z 29/10/00 the rig passed over a very strange sounding CW signal. Tuning to the signal I found it was VE7SL and that the propagation was Auroral! There was no doubt as to the sound as I had previously worked Auroral several times whilst living in southern VK3."

"I made contact with VE7SL @ 0122Z and went onto work W7HAH at 0130Z, W7JF at 0200Z and VE7SL again at 0201Z. All contacts were made on slow CW, I don't think SSB would have been possible because of the extreme doppler shift. Signals were stronger on my 2 element quad which points North than on a 3 element yagi pointing directly at VE/W7" ... Ray VK4BLK. Scott VK4JSR also reporting hearing some of the above stations along with contacts also being had by VK4KK & VK4CP atleast from 0130Z to 0230Z. Auroral propagation with TEP extension, it does happen! WWV numbers were 182/17/3 with magnetic storm warnings.

Ray's VK4BLK's Log for November 2000 reads (all CW contacts) 5/11 UY1HY @ 0830Z 559, 6/11 UT2IO @ 0648Z 559, 7/11 HK4CZE @ 2332Z 549, 8/11 W5OZI @ 0013Z, AA5XE @ 0013, W3XO/5 @ 0014, W5UN @ 0020, W7RV @ 0034, WA7JTM @ 0040, WA7A @ 0043Z, W7USA @ 0045Z, WA7CJO @ 0047Z KC8CC @ 0058Z, 12/11 KH6ND/KH5 @ 0046 559, 20/11 FO5RA @ 0039 549, 21/11 K6QXY @ 0214Z & 22/11 K6QXY @ 0224Z. The contact with UT2IO was very early for the EU path. Some well-known W calls worked on 8/11/00 also!

Mike VK2FLR reports ... "From 0830 to 1010 on 31 October, I worked 5 SP6, 3 DL, 4 OK, 1 OM, 9 I, S53 and 9A2, all on CW at up to 579, except for a couple of Italians on SSB at up to S5. Best Eu opening I have had. Conditions were ideal - no noise, no video buzz, no loud locals. Others heard working the DX were VK2QF, VK2VC, VK2APG, and VK2EDB. I suspected we were in with a chance yesterday evening when we had good Es into VK4 at around 6pm. During

the opening VK8RAS was a solid 579" ... Mike VK2FLR

144 MHz and above

2 metres has been a bit slower starting than last year, so far no reported VK5 – VK6 contacts although conditions have gone close several times now. Please look out for the VK6 Augusta beacons on 144/432 & 1296 as reported in earlier columns. Locally we have had some conditions to the SouthEast VK5 @ 400km with 55 signals from Colin VK5DK @ 1000Z on 19/11/00. Signals on 432 MHz were well down on 144 MHz though.

During the Spring Field day I managed to go portable with Steve VK5AIM and Colwyn VK5UE (AR Editor) and operated from 4 various grid squares, about 120km north of Adelaide, over the 24 hour period. Contacts were had on 50, 144, 432, 1296 & 3400 MHz. Yes 3400 MHz; the crystals have been changed to suit the new bandplan ready for this summer. (If anyone needs 90.444 MHz xtals for 3400 – 144 MHz I have a few to spare) 10 GHz went out portable as well but unfortunately the nearest station with 10 GHz, Colin VK5DK, was hard enough to work on 50 MHz let alone higher over the 520km path! It was an enjoyable time; a surprise contact was Jim VK3AEF at Nhill 4/11/ @ 1153Z on 50.150 as well as 146.550 FM! Distance just around 500km

Guy VK2 reports .. " Recent contacts on 144MHz from VK2KU: Meteor Scatter 16/11 at 1917 VK3UM, VK3HY, also heard VK7JG. 17/11 at 2023 VK7JG. 17/11 at 2053 VK4KZR, just missed VK4DFE. Sporadic E 20/11 at 0129 VK4FNQ, also heard VK4ABW but no contact 21/11 heard VK4ABW again, no contact. Aircraft Scatter 17/11 at 2036 VK4AML for a new one. I very rarely hear VK4, too much dirt in the path!" ... Guy VK2KU

Neil VK2EI at Pt Macquarie reports on "MS" activity around the time of the "Leonids" ... "Here is what was heard from my QTH: 16/11 Numerous short pings. Only identifiable call was VK3UM. 17/11 Average of about 10 pings/hr 1923 Heard VK7MO off back of my beam working VK4DFE, both 5/2 Swung beam to 220° 1924 Worked VK3UM 5/2 Worked VK3CO 5/2 (In fact both were much stronger!) (There were several others also called during this burn) Heard VK3KEG (didn't log the time) 2004 Heard VK2YOC/VK3KU full callsigns on one ping 2011 Heard VK3? All the rest were too short to identify. 18/11 Average of about 10 pings/Hr, all-short or weak. Beaming 220° 1829 Heard VK7MO 1837 Heard VK3ZL?, missed the last letter of callsign. General propagation below normal. This was my first serious MS attempt and found it very interesting. Looking forward to the next one!" ...Neil VK2EI.

And Chris VK4DFE from Maleny reports ... "Re: Leonids. 2025z this morning heard VK3KEG at 5/2, peaking 5/5. Also hrd by VK4KZR and VK4TZL (Hervey Bay). Many S5-S8 sigs from VK2's. 144.100 very busy." ... Chris VK4DFE

MICROWAVE PRIMER PART SEVEN:

10 GHz Continued

Having discussed the evolution of equipment for 10 GHz, we will turn our attention to making a start. As previously mentioned 10 GHz seems to be the next jump from 1296 MHz for a large number of people, yet the two bands have distinct differences in construction techniques after all one is 9 times the frequency of the other! While you may have got the hint from earlier parts of this primer that some of the intermediate bands perhaps make better training areas, there is still something about jumping into the deep end of the pool! So how do you start?

Step One: The best recommendation is to find someone or a group closeby who shares the same interest. Sometimes you can be lucky, but the time saved in pooling resources reduces such a project from years down to months! You will need to have or have at least access to a reasonable amount of test equipment .. this is where groups really help. It will also help immensely in getting hold of the various magazines and literature

Step Two: Test equipment. Some means of differentiating various signals or frequencies and measuring the various levels makes life so much easier (i.e. possible). A microwave power meter (Bolometer type) is probably the most important piece of equipment. You are able to measure so many variables that otherwise could make or break a system. For identifying signals a Spectrum Analyser is handy, but not essential. A signal source is also handy for antenna work and tuning amplifiers, but not essential. Old HP 620 Klystron Signal Generators pop up, from time to time or you can make use of a Gunn diode movement detector. A useful signal generator can also be made using ERA series MMIC multipliers and amplifiers ... an ERA1 can give 5 mW or more saturated power on 10 GHz with no tuning. A poor old HP620 is lucky to get better than 1 mW. And then you will need an assortment of various SMA leads and some attentuators for comparative measurements.

Step Three: What do you want to do? Narrowband or otherwise? Maybe you want to experiment with Phase 3D? Or work ATV, or narrowband Tropo work or just to add lots of multipliers for field day work (I had to put that in.. it works!). 85% of all these modes use the same building blocks, i.e. discrete component on Teflon PCB designs. The balance is achieved using simpler technology like Gunn diodes. If interest is there I will address Gunn diodes in a separate section.

Step Four: The design. In the last part I touched briefly on several of the designs that have been published or made available over the last 14 or so years. VK microwave enthusiasts have successfully replicated most of these designs. Which do you pick?

For scratch built designs two of the more popular designs are the DB6NT Mk1 transverter and the G3WDG type transverter. The bare output of both of these transverters is a quite useful 5 – 20 mW. Other designs are around, they all are seemingly based on the original DC0DA 1986 design using plumbing pipe cap resonators.

For modified surplus designs, the Qualcomm satellite transceivers have been a boost to 10 GHz activity. Most in the country were brought in and distributed by Alan Vk3XPD .. it would be safe to say they out number all other types of transverters. There is a bit of work required to get them going but they do work and they will take a lot of abuse, just perhaps a bit harder to tune for a novice when compared to a purpose built 10 GHz transverter. A newer design is available now from the US using a later transmitter PCB but still with the original "discrete PA"

After building four 10 GHz transverters (2 DB6NT's and 2 Qualcomm's) plus helping get a few

others going (including about half a dozen 1 watt amplifiers!) I reckon it comes down to whether you want to scratch build a design or modify a commercial satellite uplink. Surprisingly there is actually little difference in effort between the two options.

DB6NT and others have various amplifier modules to take the transverter output to at least 200mW (more useful) where upon a further single stage will get you about 800mW. Up to 20 watts solid state can be had but some of these devices are worth around A$800 or worse! The alternative to that is to use a surplus Qualcomm 1watt PA. One of these properly tuned only requires about 0.25mW to get 1-watt output. I run a 15-db SMA pad between my DB6NT and a Qualcomm for portable use. After tuning a large number of these I tend to think they are the better way to get 1 watt of power on 10 GHz. 1 watt is plenty of power!

For home station use that 15 db pad is replaced by a run of RG214 coax up the tower to a masthead mounted 1watt PA. Much better than using waveguide! On receive I have a 30 db gain Preamp up top driving another bit of RG214 running down the tower. The loss of good RG214 (double shielded) is about 1db per metre at 10 GHz. New 9913 coax is also usable (about 0.7db loss per metre) LDF4/50 also works although its bigger internal dimensions make it almost look like waveguide. Single shielded coax RG213 and "no name" coax is next to useless as signal leakage/shield excitation means nearly double theoretical losses. If you want to test how good or bad coax is do it at 10 GHz!

The other source of 10 GHz power is surplus Travelling Wavetube Amplifiers (TWTA). TWTA's are a thermionic progressive wave tube, accidentally discovered in the forties when helix antennas where being played with. They have both high gain (35 – 40 db) and broad bandwidth. A 14 GHz tube can be used on 10 GHz with just a bit of matching. On the downside, they require stabilised 3 – 6 kV HV Helix and collector voltages, as well as being easily destroyed with too much drive power (more than 10mW can kill!). TWTA's do pop up from time to time as surplus 14 GHz satellite links are sold or dumped. I have seen some go for several thousands of dollars at auction or heard of tales where they have been used as landfill under new runways (true!) They do pop-up so as usual a keen amateur will hunt them down! TWTA's are restricted to serious portable work and EME unless you have a good supply of waveguide to go up a tower!

Next month, Antennas on 10 GHz

In Closing

Phase 3D Launched! A new era in amateur radio communications was ushered in on November 16, 2000 (UTC) as AMSAT-DL Executive Vice President and P3D Mission Director Peter Guelzow, DB2OS, informed AMSAT News Service that the launch of the Phase 3D satellite from the European Spaceport in Kourou, French Guiana was successful — following a spectacular nighttime launch. "It was a textbook launch" said DB2OS, "from the first minute of flight, until P3D separated from the Ariane 5 launch vehicle, all received telemetry indicates the launch went perfectly and our satellite appears to be in very good health." ...courtesy AMSAT.

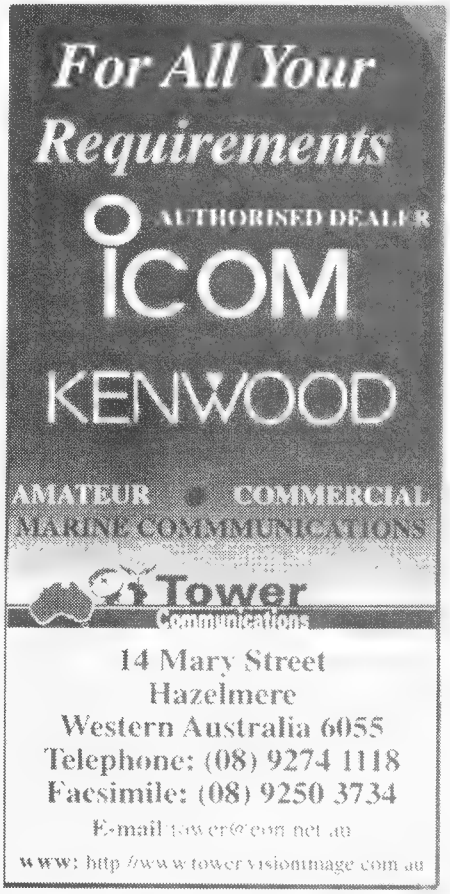
That's the good news about Phase 3D. The not so good news concerns the eventual coverage of Phase 3D. The elliptical 36-hour orbit of the satellite varies from 4,000km to some where near 40,000km. Japan, Europe & the USA each take their turn at maximum coverage while Australia along with the rest of the Southern hemisphere will see only part of that coverage with, 4000km high passes. While this may not be too much of a problem on the lower bands, it will probably restrict the microwave coverage from VK to just VK/ZL and a bit further. A bonus is perhaps the lower pass loss on 4000km vs 40,000km! And here's hoping they leave some of this stuff turned on for the Southern Hemisphere!

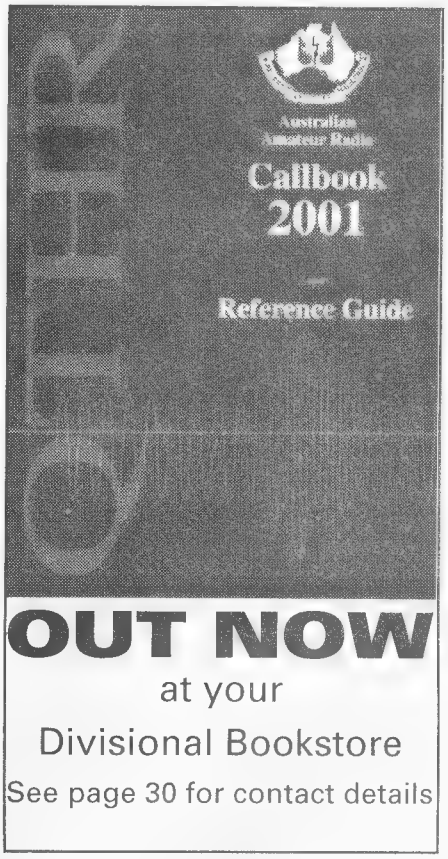
For the next 6 or so months 3D will slowly edge into its final orbit so we will have a better chance to work "further" now rather than later. If anyone is seriously contemplating using on the 2.4 GHz and above facilities please drop me a line and I will put you in touch with others.

I'll leave you with this thought. ... "I can't understand why people are afraid of new ideas. I'm frightened of the old ones." - John Cage

Till next month

73's David VK5KK





Repeater Link

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RF Safety

How serious do we all take electromagnetic radiation safety and in particular at repeater sites? Hopefully we all know that there is a level of exposure to radio frequencies considered to be safe and take this into consideration when climbing on towers. If your repeater site is a shared site there are other transmissions from the tower that you may know little about and this should be of concern. However in general most sites that are two way radio orientated, have power levels that are moderate, with most transmitters being under 50 watt and only being spasmodic in their operation. Provided your stay within a metre or so of such antennas is under an hour or so, there is little to be concerned about. The real concern is on broadcast structures that radiate high power on a continuous basis. In my work situation this occurs from time to time and as such I have undertaken RF safety courses. These have been interesting and are worth passing on for their oddities if nothing else.

Qualifications

It is to be assumed that those giving the RF safety course know considerable more than you do, but this is not always the case. For example, as happened to me, the RF safety course was an addon to a tower climbing and tower rescue course, both of which where excellent. However it quickly became obvious that tower riggers, well versed in their field of tower safety and rescue, knew enough about radio to be scary.

Firstly there is a history of stories that are funny, but most often are factually incorrect. I remember one from way back when I was a teenage trainee, about a young technician who climbed a high power medium frequency broadcast tower and needed to relieve himself from near the top of the tower. The liquid stream was fine until a quarter wavelength was obtained and a certain appendage became barbecue meat. Now it all sounded very funny at the time and as young trainees we all made a mental note to make sure if any live broadcast towers were to be climbed, toileting would be done before climbing began. But the story is just some ones avid imagination. For starters water separates into drops and there is no continuous quarter wave receiving aerial. Secondly most broadcast towers are less than a physical quarter wavelength high.

In more recent times the stories were many to liven up the RF safety part of the course. One referred to a large dish antenna on a city building pointing straight into an adjoining building. People in this building reported being hot from the radiation. Now it might concern you looking straight at a large parabolic antenna less than a hundred feet away, and so it should, but being heated by it! How many watt was this dish putting out was the question? The answer, 50-watt as best could be remembered, but 50 watt can't make you hot was the response. Yes it can because of the gain of the dish, some 30 or 40 dB. This of course equates to an ERP of more than 50,000 watt, more than enough to make you hot, went the logic. Yes but ERP or not it is still only 50 watt, all be it concentrated. Even if you absorbed all the power it would only be 50 watt. No was the reply, you are forgetting the gain of the dish, and so it went. It was time to shut up and flow with the course. It was obvious that the instructors were way out of their depth. They knew enough to pass on considerable missinformation and many more stories with a basis of truth, but enhanced so as to be dangerous. RF safety is very important and there is no room for inaccurate, let alone completely wrong information.

Public Concern and Experts

No wonder the general public can so easily be whipped into a frenzy when a new phone tower appears next door. All this new found concern over phone towers is very difficult for the phone companies, yet for years there has been all sorts of radio transmissions close to the public. Take for example a medium frequency broadcast mast in a northern suburb of Perth. This tower has houses within 80 metres of the tower and has a combined power output in excess of 100 kilowatt! Sure the frequencies are a lot lower than mobile phone towers, and the higher the radio frequency the greater the danger, but you sure would not get me living within 80 metres of the base of a 100 kilowatt transmitter, 24 hours a day. I even rang the radio station during a listeners call back discussion about the dangers of phone towers and said to the presenter, was she aware that she was being broadcast on a tower emitting 100 kilowatt in a suburban area? The question went right over her head. She had no idea what I was talking about and yet these people help shape public opinion and concern over such issues as phone towers.

Have you noticed the warning signs appearing at petrol stations not to use your mobile phone. Now this one is really right off the planet. For year's taxis and all manner of two way radio transmissions have been occurring at petrol stations, and still occur. Have you ever heard of a petrol station blowing up due to someone using a two-way radio, let alone a mobile phone with one hundred times less power? I also had the chance to ring a radio station during a call back program on just this issue, mobile phones at petrol stations. The expert knew of no instances of a mobile phone causing a petrol station to blow up and knew even less about two-way radios and the relative power levels between them and mobile phones. Yet these "experts" forget public concern and we all end up with yet another regulation. And by the way there is a petrol station within a short distance of the 100-kilowatt broadcast mast, but no concern over it.

RF Levels

In the past couple of years my employer has undertaken considerable

measurements of RF levels from all our microwave equipment. Broadcast microwave equipment used for linking varies in power level from fractions of a watt to 20 watt. Satellite links can be several hundred watt. The results of the tests showed there was risk within a few metres for the 5 to 20 watt levels in line with the antenna. A safe distance of around 10 metres away from the direction of the antenna is a good rule of thumb. This is in the frequency range of 2 GHz to 10 GHz. And it is important to note this is the continuous 8-hour exposure. You would have to stand within a few metres of the antenna for over 8 hours to exceed the safe radiation level at power level of several watt. There is a considerable built in safety margin as well. Also of note is that the radiation levels are different for those working in the industry as compared to the general public. The RF exposure levels are lower for the general public than the industry worker. This may seem the wrong way round, but as I understand it, the logic is that the worker has knowledge of the situation and as such can take steps to minimise exposure. The general public have no idea what the equipment is and needs an extra level of protection.

One interesting outcome of the RF level measurements was the safe distance from a 7 metre satellite dish. The maximum radiation risk is about 2 kilometres from the dish and not closer in to the dish. Why the radiation level concentrates at this point from the dish is unknown to me.

Us Amateurs

How can we as radio amateurs add something to this debate? Most of us should have knowledge way above the general public. The public gets much of their information from the media and the media know very little about radio. Any chance to beat up a story often results in little relationship to the facts. It is only of recent weeks that the highest radiation levels from phone towers has been reported by the media to be some considerable distance from the phone tower. If you live right next door to a phone tower you receive less radiation than someone living several hundred metres from the tower. We know it is all to do with antenna patterns designed to concentrate the radio energy at a distance but all the public see is a big tower and the further away from the tower the better. This could even result in a tower being forced to move from a particular location and then causing a greater radiation level at the original point of concern. For us radio amateurs this could well spill over into our own towers. Even though your antennas may only be transmitting 1% of the time, unlike medium wave broadcast towers in suburbs, transmitting considerably more power 24 hours a day, every day.

Hopefully we won't be greatly effected by the issues of mobile phone towers and perhaps this is because our antenna structures don't look like mobile phone towers, but in light of the miss information by the media who knows how we will fair.

Don't Hang The Washing On The Aerial: the words

[Verse 1]
Last week I bought a little wireless set,
Thought I'd like to listen when home I get,
When my work was over I thought it would be grand,
To listen to a concert, a nice brass band,
In my garden I put up an aerial, thinking of the treat I had in store
When I got home today the wife was feeling very glad
This is the finest drying day I've ever had
When I saw the washing I got mad
I looked at her and then began to roar

Don't hang the washing on the aerial Maggie! I want to listen in
When I want to hear the music, how it hurts
For all I hear can hear is the flapping of the shirts
You cause a disturbance of the wavelength Maggie
I seem punished for my sins Eighteen twelve by old Tchaikovsky makes my cat's whisker Pop-off-ski Every time a washing day begins

Don't hang the washing on the aerial Maggie! I want to listen in
When I want to hear the music, how it hurts
For all I hear can hear is the flapping of the shirts
You cause a disturbance of the wavelength Maggie
I seem punished for my sins And music by Novelo sounds as if it's gone 2 L O Every time a washing day begins

[Verse 2]
The wife said, "Your aerial can be used for lots of things
I've put a rope across it, now the kids play swings
On a summer's evening, when all is calm and bright
The cats come around and do a tight rope act each night;
With the pole I've made a lovely clothes prop
The headphones keep the babies ears in place
Fifteen bob a year is very cheap you will agree
For all of these advantages, and now, it seems to me
Wireless in the home is a necessity
I said May be, but still, if that's the case

Don't hang the washing on the aerial Maggie! I want to listen in
When I want to hear the music, how it hurts
For all I hear can hear is the flapping of the shirts
In your pegging out the bits and pieces, Maggie
The neighbours stand around with grins
There's lots of fun on Mondays, there's a foxtrot by your undies
Try time a washing day begins

Don't hang the washing on the aerial Maggie! I want to listen in
When I want to hear the music, how it hurts
For all I hear can hear is the flapping of the shirts
In your pegging out the bits and pieces, Maggie
The neighbours stand around with grins
When music's played by Schuman, there's that sound most inhuman
Ev'ry time a washing day begins

HF Predictions

by Evan Jarman VK3ANI
34 Alandale Court Blackburn Vic 3130

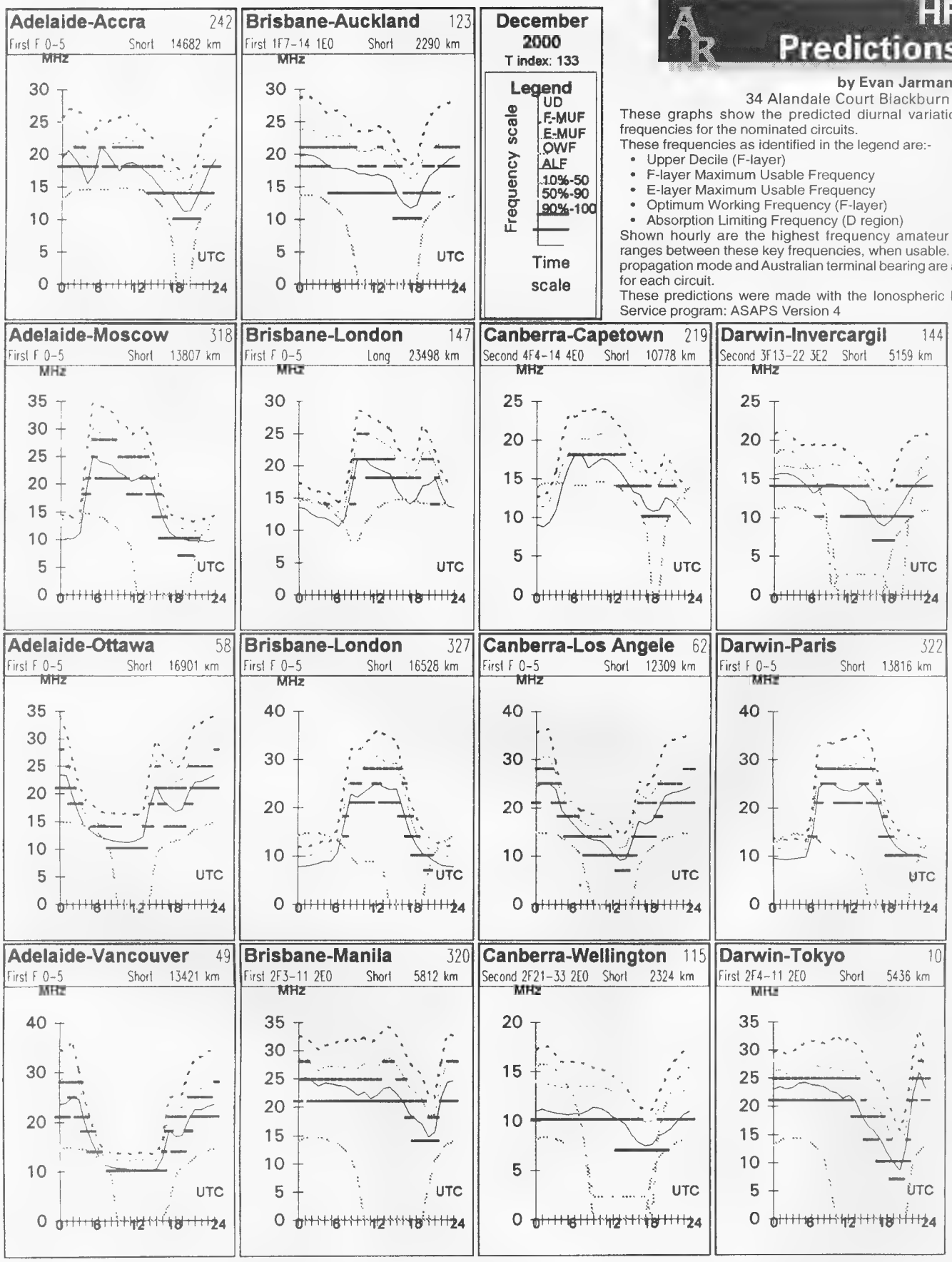
These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.

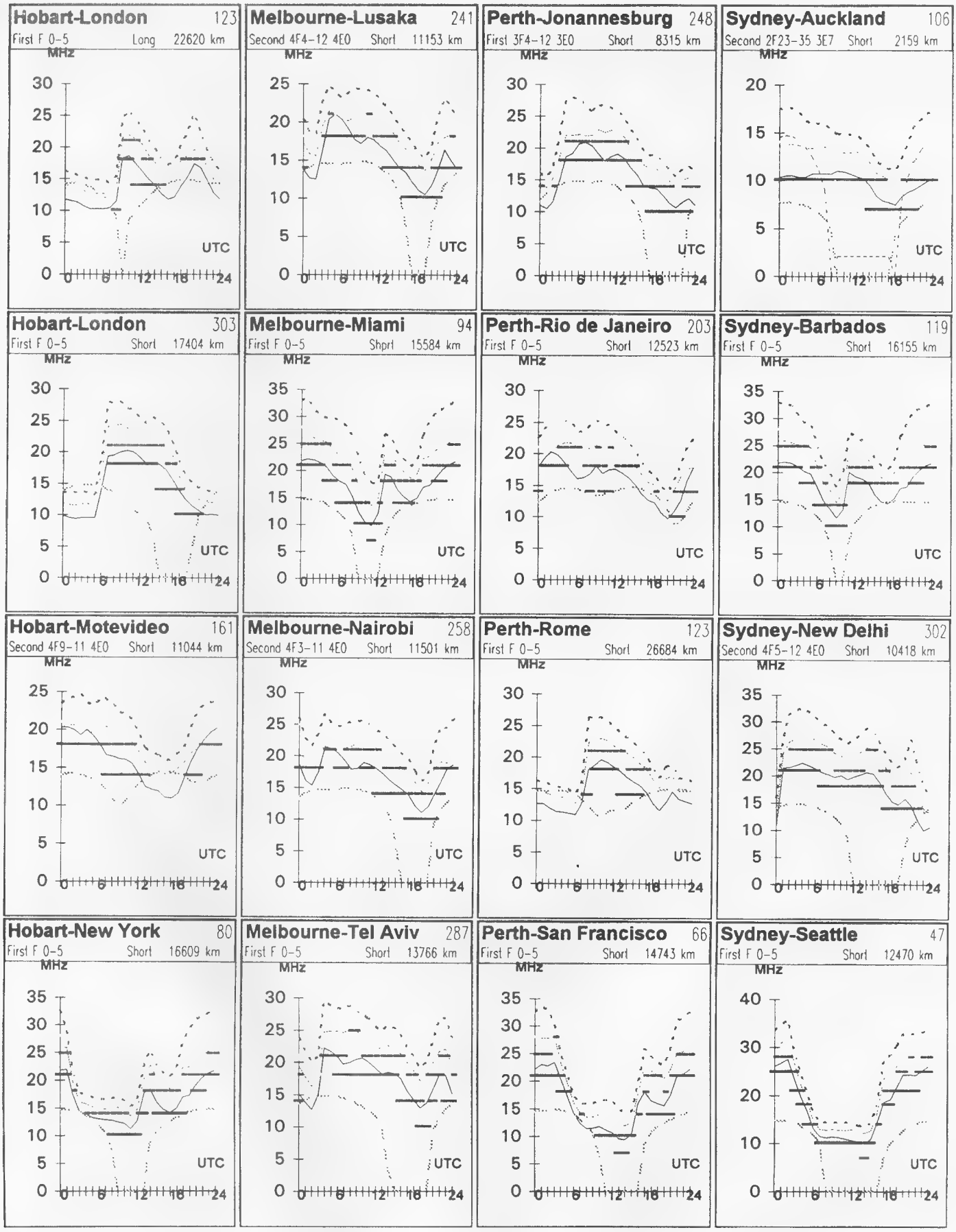
These frequencies as identified in the legend are:-

- Upper Decile (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit.

These predictions were made with the Ionospheric Prediction Service program: ASAPS Version 4




Hobart-London 123
First F 0-5 Long 22620 km
Melbourne-Lusaka 241
Second 4F4-12 4E0 Short 11153 km
Perth-Jonannesburg 248
First 3F4-12 3E0 Short 8315 km
Sydney-Auckland 106
Second 2F23-35 3E7 Short 2159 km
Hobart-London 303
First F 0-5 Short 17404 km
Melbourne-Miami 94
First F 0-5 Shprt 15584 km
Perth-Rio de Janeiro 203
First F 0-5 Short 12523 km
Sydney-Barbados 119
First F 0-5 Short 16155 km
Hobart-Motevideo 161
Second 4F9-11 4E0 Short 11044 km
Melbourne-Nairobi 258
Second 4F3-11 4E0 Short 11501 km
Perth-Rome 123
First F 0-5 Short 26684 km
Sydney-New Delhi 302
Second 4F5-12 4E0 Short 10418 km
Hobart-New York 80
First F 0-5 Short 16609 km
Melbourne-Tel Aviv 287
First F 0-5 Short 13766 km
Perth-San Francisco 66
First F 0-5 Short 14743 km
Sydney-Seattle 47
First F 0-5 Short 12470 km
MHz
UTC

HAMADS

- Hamads may be submitted on the form on the reverse of your current Amateur Radio address flysheet. Please print carefully, especially where case or numerals are critical.
- Please submit separate forms for For Sale and Wanted items, and be sure to include your name, address and telephone number (including STD code) if you do not use the flysheet.
- Eight lines (forty words) per issue free to all WIA members, ninth and tenth lines for name and address. Commercial rates apply for non-members.
- Deceased estates Hamads will be published in full, even if the ad is not fully radio equipment.
- WIA policy recommends that the serial number of all equipment for sale should be included.
- QTHR means the address is correct in the current WIA Call Book.
- Ordinary Hamads from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.
- Commercial advertising (Trade Hamads) are pre-payable at $25.00 for four lines (twenty words), plus $2.25 per line (or part thereof), with a minimum charge of $25.00. Cheques are to be made out to: WIA Hamads.
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• Mobile Two-way manuals, crystals etc. About to be dumped. Collect or pay freight - all are free- between 200 & 300 manuals. Ph (02) 9791 0366 (wk) 9/5 for details. VK2ACV Tony. tonymul@pip.com.au

• Ameritron Linear Amp AL811. Serial no 12391X, Ex. cond., complete with new spare set of final tubes. $600. Kevin VK2ANT. Ph (02) 4389 2708 3

• Kenwood R-5000 communication receiver plus instruction book, recommended, 5 star rating, genuine snap $550 QTHR Newcastle Ph (02) 4954 0893

• Alinco DX70TH HF/6m XCVR 100W as new in box with manual and mobile bracket $1050. Cliff VK2CJL Ph (02) 6972 3788

• BOOK: "Radiotelegraph and Radiotelephone Codes, Prowords and Abbreviations." 2nd Edition. $15 posted Australia. 90 Pages. Q,X,Z Codes, 97 Phonetic, 20 Morse Codes. Phillips, Myer, 10,11,12,13 Codes. Much other info. Internet - http://www.nor.com.au/community/sarc/phonetic.htm VK2JWA, John W.Alcorn. QTHR. Ph (02) 6621 5217. Email jalcorn@nor.com.au INTERNET Connect from Port Macquarie to the Gold Coast from 90c per hour. Summerland Amateur Radio Club. For info - http://www.nor.com.au/community/sarc/sarc.htm - John, VK2JWA, QTHR, jalcorn@nor.com.au. 33 Spring St, Lismore, NSW, 2480. Ph (02)-6621 5217

• Audio amplifier valve 655OA made by GE USA $60 ea. Dieter VK2EDD Ph (02) 4982 9847

• Kenwood TS-811A 70cm all mode base, excellent cond., owners manual, service manual, 25W $750. Kenwood TS-43X HF 100W, gen. coverage, with manual, FM fitted, good order $500. Grant VK2VB Ph (02) 4965 8658 ah QTHR or vk2vb@optusnet.com.au

• Fax receiver Alden 9273A solid state 1970's model with spare paper rolls and manual. Never used, too big and heavy. You collect! Price very negotiable. Good condition. Email John at vk2dvw@qsl.net or Ph (02) 9580 6567. Bring a big mate or a trolley, this is hernia territory!

• Kenwood TS-520 HF transceiver, s/n 342042. 3.5 and 7 MHz bands unserviceable $150. QTHR Ph (02) 9759 1274

WANTED NSW

• Old unloved heavy filthy, receivers,.valve stuff for a "nutt", that gets them going again, even trashed one's military or commercial receivers, even home brew jobs. Also after any old WRTVH's books, in Sydney will personally collect and will bring a broom to help. Outside of Sydney will make special arrangements. Will pay money or simply collect, your call. But I have 130 sets all set up per previous AR articles. So don't delay call Ph (02) 9533 6261 or email to dxer@fl.net.au WIA L21068 John.

• Quad OP-AMP IC type NE5514N (or SE5514N). Qty required = 4. To use in several receiver and XCVR projects in the 1999 ARRL handbook. Contact Pat Brennan VK2ABE, PO BOX 158 Tamworth NSW 2340

• Wanted for AWA V.O.M. type IA56074, p/n IR56075 probe or body of same, could also use p/n 2R56075 probe. Stan Dogger. Ph (02) 6677 9292 QTHR

• Hills or similar winch-up tower. Will dismantle if necessary. Preferably in VK2. Phone Glen VK2FC Ph (02) 4982 6800

• HY-GAIN medium or heavy duty antenna rotator, BENCHER BY-1 keyer, DRAKE MN-2700 antenna tuner, SWISSLOG logging software. Tom, VK2OE Ph. (02) 9793 2347 (evenings) or vk2oe@arrl.net

• Circuit diagram for Swan 500c tranceiver wanted. In particular area around function switch S2. QTHR VK2WF Ph (02) 6775 1080

FOR SALE VIC

• Yaesu FT 101 E transceiver with handbook $ 375.00. Yaesu FT 7 with DC supply and valve linear $ 300.00. Peter VK3APO Ph mobile 0428 178 640

• Kenwood TS-711 2m all-modes 25W out, power supplies built in (GC) and MC-60A Desk Microphone $750. Richard VK3ZCL AH Ph (03) 9729 1947 12

• Icom IC271A 2 metre all mode with inbuilt preamp, excellent condition with full service manual $700. Icom 735 HF transceiver, excellent condition with full Icom service manual $700. Charlie VK3FMD Ph (03) 9572 3583

WANTED VIC

• Circuit/Technical manual for STAR SR-700A communications receiver. Photocopy or original will be OK. All costs gratefully reimbursed VK3DBF QTHR. Ph (03) 9796 8982

FOR SALE QLD

• Bencher iambic paddle and home brew Curtis 8044B iambic keyer $110. Ray VK4BLK Ph (07) 4939 2284

• Spectrum analyzer Hewlett Packard 141T, 0-1.2GHz. 8554B RF and 8552 IF $1850. Ray, Ph (07) 3299 3819, fax (07) 3299 3821

• Antenna DX 8 band multiband DX manf. by GAP USA. No radials req. $400. MFJ 564 de Luxe iambic paddle $45. Ph (07) 5578 8052 QLD 4226 hama@smartchat.net.au

WANTED QLD

• Wanted Urgently: Grid Dip Oscillator prefer bipolar transistorised (or FET) with multi-coil coverage from 5 MHz to 250 MHz. Calibration accuracy is of no consequence; however, sensitivity is! Noel VK4CED Ph (07) 4069 9878 email thecape@bigpond.com

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• Large AM valve transmitter PEP 130W finals pair 807s 30"H 16"W 14"D home brew, coax and ladder line connections. One for the real enthusiast. Separate BFO unit. QTHR Ph (08) 8294 6906

WANTED SA

• M5106P Mitsubishi audio amplifier IC needed to replace IC in Sansei Electronics signal tracer Model SE-360. Ivan VK5QV QTHR, Ph (08) 8725 5514 email: ieh@dove.net.au

• Information on source of video on life of Nikola Tesla early radio pioneer shown about two years ago on TV. Rob VK5RG QTHR Ph (08) 8379 1889 gurrrc@picknowl.com.au

• Reasonably priced Yaesu FT101ZD in good to excellent working condition. Preferably with manuals, although not essential. Chris VK5JJJ Ph (08) 8294 0774 or vk5jjj@arrl.net

WANTED WA

• Linear amp IC2KL or similar. Cliff VK6ABF QTHR Ph (08) 9337 1532

• Digital readout for YAESU FT101E. VK6GW QTHR Ph (08) 9298 8489

FOR SALE TAS

• Collins KWM-2 with built-in DX-ENER processor. Matching 75S-3 receiver and power

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MISCELLANEOUS

- Linear amp 2m needs new valves 2 x QQE06/40. Will swap for HF amp. HM, unfinished project O.K. or any HAM junk. Vic VK4AXM QTHR Ph (07) 3287 5655
- Will give away vintage Philips VCR model N1512 s/n W D07 709A/1000 379 with handbook. Yuri VK5ZYS QTHR Ph (08) 8445 8492
- If you got your licence before 1975, you are invited to join the Radio Amateurs Old Timers Club. A $2.50 joining fee plus $8.00 for one year or $15.00 for two years gets you two interesting Journals a year plus good fellowship. Arthur Evans VK3VQ or Allan Doble VK3AMD can supply application forms. Both are QTHR in any Call Book
- The WIA QSL Collection (now Federal) requires QSLs. All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, tel. (03) 9728 5350

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New Associate Membership available to the Old Timers Club

For a number of years the requirement for membership of the Radio Amateurs Old Timers Club Australia has been to have held, or been qualified to hold, an amateur radio licence for a minimum of 25 years.

Bearing in mind the number of operators who have taken up the hobby of amateur radio relatively late in life due to pressure of family or business, it has been decided to create a grade of associate membership of the Club.

The qualifications for Associate Membership are to be aged 60 years or more, and to have held, or been qualified to hold, an amateur operator's licence for a minimum of 10 years.

Associate Members will receive the two issues of the Club's highly regarded magazine, OTN, which is published in March and September of each year, but will not be entitled to vote or hold office in the Club. Full membership will be automatic when the 25 year target is reached provided, of course, that subscriptions are up to date.

Current subscriptions, which fall due on 1 April each year are a joining fee of $2.50 and an annual subscription of $8.00 (or $15.00 for two years). Life Membership is available for $100.00.

Application forms, complete with details of the Club's Constitution, are available from the Honorary Secretary, Arthur Evans VK3VQ, 3/237 Bluff Road, Sandringham Vic 3191 on receipt of a stamped, self-addressed envelope.

Telephone enquiries will be welcomed by the Secretary, Arthur Evans VK3VQ, on 03 9598 4262, or by the President, Allan Doble VK3AMD, on 9570 4610

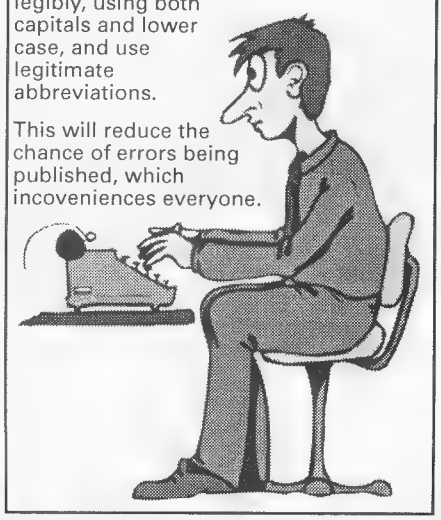
PLEASE BE KIND TO OSCAR

Meet Mr Oscar Goldenboy, our Hamad typist

Oscar is not an expert in your field — he thinks Megahertz is what happens when he stubs his toe on a rock.

To help Oscar, please write your hamad legibly, using both capitals and lower case, and use legitimate abbreviations.

This will reduce the chance of errors being published, which incoveniences everyone.



We Love emails

If you are emailing your Hamad, the method MUCH preferred by our typesetters, could you please assist by following these two guidelines:

1) **Please use upper and lower case in normal text (not caps please)**
2) **Please enter the words directly into the body of the email**

Have you heard this week's Divisional Broadcast?

See page 30 for times and frequencies.

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Over to You

To Morse or not to Morse?

Is that the question?

In the hope that my previous expressions of support for CW would be read in the great spirit of Amateur Radio, I believed that it would not be either necessary or appropriate for an additional one. However, references to arrogance and anachronisms have generated a need for further comment and explanation. I can't understand why those who are opposed to CW seem to have an intense and absolute dislike for it. Therein lies an unhealthy polarisation within our sport/hobby. Those of us who use CW don't get angry at other forms of transmissions. So why does the reverse seem to apply?

When I look at the Olympics and I see Archery, Javelin, Shot put, Rowing and Fencing, to name a few, I see a great parallel in anachronisms which relate to CW. Our anti CW fraternity may well look closely at those activities and question why the Olympic movement keeps them when we are trying to do away with CW. People nowadays are more interested in our heritage than ever before.

I recently conducted a "look see" day for members of my fishing club at my shack. Without exception, the interest was in the CW side of things. It is not a great feat to create a voice communication in this modem age. Clearly, technology has caught up with us and our supporters of a no CW policy are hard to fathom.

Firstly, if the anti CW fraternity have already qualified, why worry. (Maybe some of them struggled a bit and gave it up after the exam) However, that is no reason to take it out of the exam. Is it?

Secondly, it is still the cheapest and most simple form of HF communication. The term "black box operator" can just as easily apply any other form of transmission.

Thirdly, and by far the most important is that there are literally thousands of overseas operators from small countries who do not have the universal language skills nor the sophisticated and powerful equipment to communicate on DX. CW is, and will remain their main, if not major source of a DX outlet. Your only have to listen to the lower end of the band any evening. You certainly couldn't fit the same number of side band stations there, nor could. you expect to understand most if you did. These operators are very genuine and sincere people and CW contact with them is very rewarding indeed. I don't think that is arrogance.

Anachronistic or not, CW should be retained as a qualifying subject for unlimited access to our HF facility. In the meantime, when our communities outlaw some of our older Olympic sports and close down home made pottery activities and their like, I will give further consideration to the CW question.

W. P McCarthy VK4WMC

Re: Morse Code, Amateur Radio and Tripe.

I have no argument with the Morse code and CW comments of your correspondent Allan Madigan VK2OA in the September 2000 AR but when he flippantly dismissed Tripe in favour of fillet steak, my hackles fairly rose.

What right sir, do you take upon yourself to so denigrate this princely dish? I should explain that I am both an Amateur Operator with over 50 years of Ham experience, a member of the Radio Amateur Old Timers Club, a member of the WIA and a Tripe afficianado, currently holding office of Vice President of the Fremantle Tripe Club, which has just celebrated it's 154th monthly meeting. The Club has a membership of about 100 members from all walks of life; Engineers, Doctors, Reverend Ministers, Magistrates as well as Hams, clerical workers etc. We have a brother organisation in Perth, the Perth Tripe Club and often visit one another's luncheon meetings.

Our luncheon meetings on the third Tuesday of each month, are held at different venues, usually hotels or restaurants in the Fremantle area where it is known that the chef is expert in preparing Tripe dishes and the meal is usually accompanied with music from one of our members on violin with his female accompanist on piano. The traditional Tripe and Onions is always on the menu and it is left to the chef to surprise us with additional renditions and variations in Tripe dishes. A few years ago, one of our guest chefs, an ex-submarine RAN cook prepared a seven course luncheon (all Tripe dishes) ranging from Tripe soup as starter through to Tripe sweets featuring cold (cooked) spiced Tripe served with ice cream. The courses in between consisted of deep fried Tripe, Tripe sweet and sour, Tripe pizza, Tripe sausages, and Tripe and onions. Members always vote on the meal at the conclusion of the luncheon; a vote out of a possible 20 and most meetings have an average vote of 16 to 18. We have had Tripe prepared in the English, French, Italian, Croatian and German styles and it has all been delicious. During the meal, the loyal toast, toast to Australia are drunk and at the conclusion of the luncheon, our Tripe Anthem is sung with gusto, to the tune of the Drinking Song from the Student Prince. Each November the club holds its Christmas meeting in advance on the nearby island of Rottnest and is always a great day out and good tucker as well !

So Allan Madigan VK2OA, bah to your fillet steak! Give me nutritious and flavoursome Tripe any day!

Ray Peterson VK6PW.
mailto:rwpete@ozemail.com.au

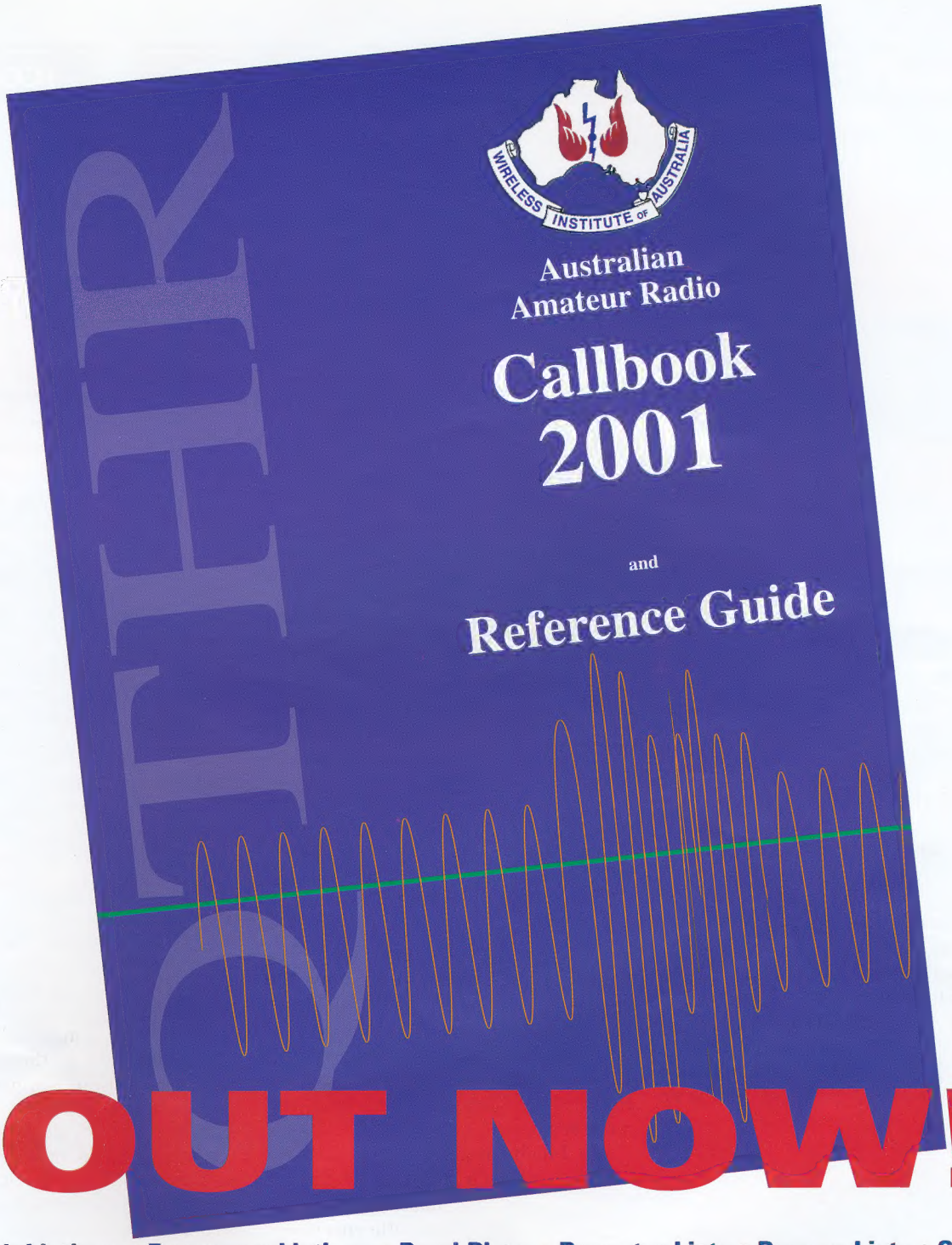
Dropping signal reports from contest exchange

If the signal report were dropped from a contest QSO exchange then the contact would no longer be valid for DXCC purposes. For this reason alone I would oppose the suggestion to drop this as part of the contest exchange. Can you imagine how many non-contester dxers would request a signal report from rare dxpedition style contest stations? It would be detrimental to their score!

Why don't we go the other way and accept or rather provide certificate awards for logs that have only true signal reports? How is this enforceable? It is not, just as enforcing the output power of contest stations is not enforceable. Simply publish the percentage of 59 sent reports for all stations and provide certificates for only those stations who have less than 75% 59. My experience is that less than 50% of QSOs are genuinely 59. Now before you go off the deep end, if you've got such a great station that everyone is S9 plus 20 dB, put the attenuator on so that only the VERY strongest stations are S9!

I certainly would love to get accurate reports during a contest. What a change it would be to know how strong... or weak you actually are.

Tony Burt, VK3TZ



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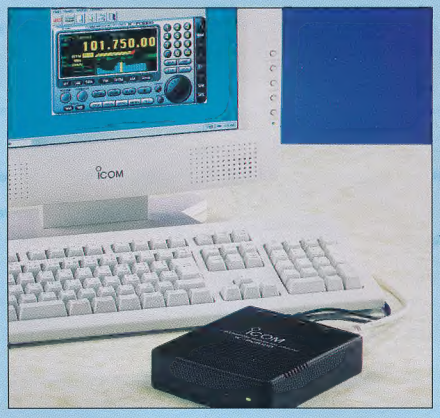
207H ***Switch to two bands for a single band price...*** In-dash versatility, VHF/UHF capabilities (one band at a time) via a band switching system, superb clarity on either operating channel, easily detachable front panel, even a connection to a packet modem supporting speeds of up to 9600bps.



Q7A ***A mini unit with maxi performance.*** 2m/70cm transceiver/wide band receiver just 8.6 cms high, wide band receive from 30 to 1300 MHz in FM/WFM/AM modes, simple operation with easy band switching, automatic squelch, crystal clear audio.

PCR100 ***Cruise the airwaves with your computer.*** Turns your PC into a sophisticated 0.5 - 1300 MHz receiver (FM/WFM/AM modes) with plug'n play installation. Multi function control panel, wide frequency coverage, and unlimited memory channels.

R2 ***Fit the world's airwaves in your shirt pocket.*** Just 8.6cm high, 0.5 - 1300 MHz frequency range divided into 9 bands plus FM/WFM/AM, auto squelch for consistent signal strength, 400 memory channels, great sound in rugged water resistant construction.

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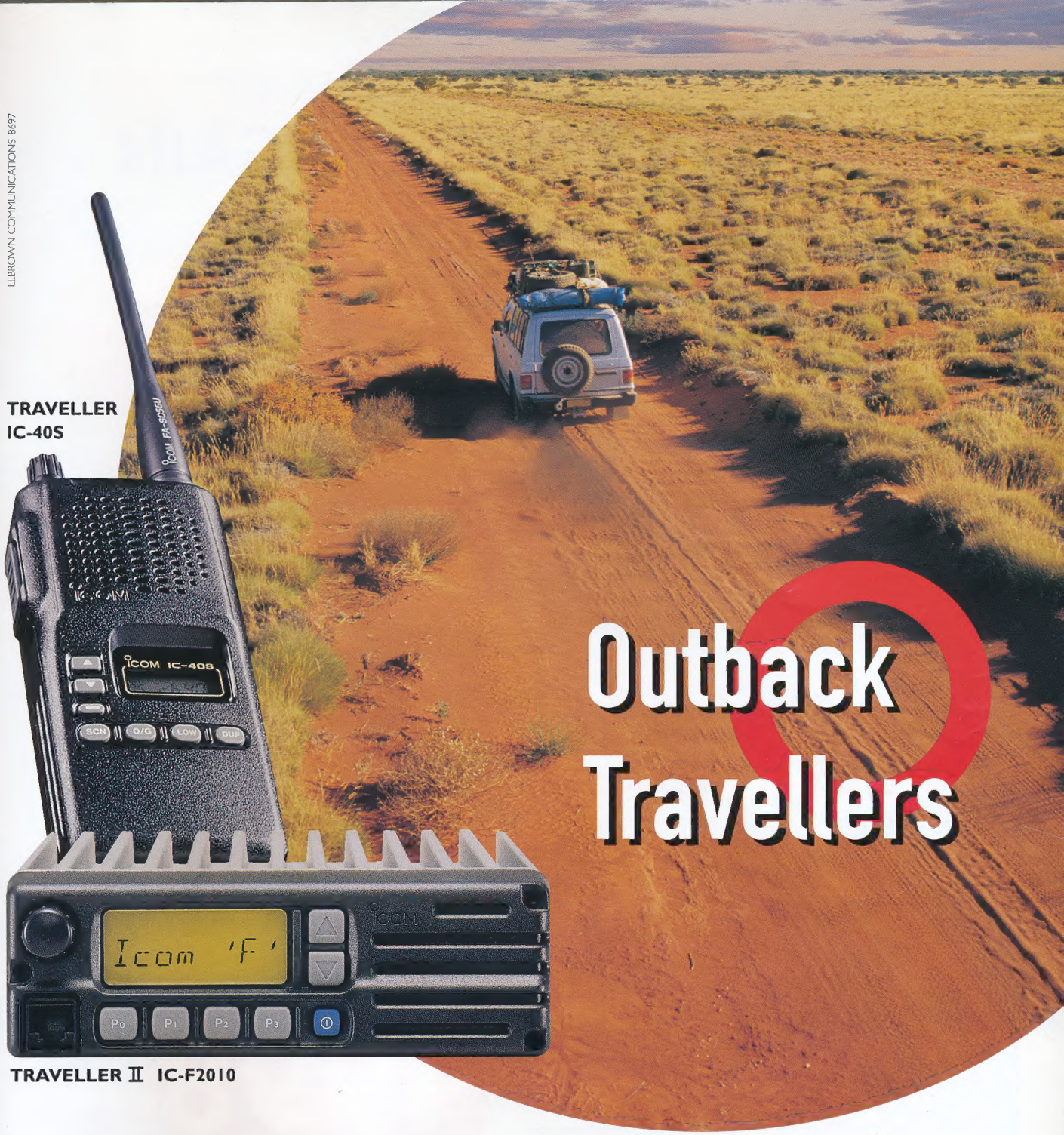

TRAVELLER II IC-F2010

Icom's Traveller™ IC-40S is the wide band portable CB for the wide open spaces. And now it's joined by the Traveller II ™ IC-F2010, a radio built on the same rugged architecture as Icom's legendary F Series. Both radios offer the highest levels of performance – comparable with commercial grade equipment, and capacity for private channels if you need them (contact your Dealer for details). When you're off the beaten track you can rely on these two Icom Travellers to keep you in touch. They're rugged, reliable, and very affordable. In fact, they make the perfect travelling companions.

2 YR WARRANTY

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YAESU'S DONE IT AGAIN

HURRY!
Only 20 pieces available at this crazy clearance price!

Yaesu FT-100 Ultra-compact HF/6m/2m/70cm Mobile

AMAZING CLEARANCE VALUE!

Now you can enjoy the fun of operating on all bands from 160m to 70cm, either at home or in your car, and at a fantastic Yaesu price.

The Yaesu FT-100 features HF/6m/2m/70cm transmitter coverage with 100W RF output on HF and 6m, 50W on 2m and 20W on 70cm, plus you can easily mount the detachable front panel using an optional lead (YSK-100) for more convenient mobile installations. Powerful interference fighting features such as a DSP based Bandpass filter, Notch filter and Noise reduction, together with an IF based Shift control, all aid reception quality during tough conditions. A Speech Processor and VOX facility are provided for SSB users and an internal Electronic keyer is provided for CW operation. Also included are Dual VFOs, built-in CTCSS encode, 300 memory channels, all-mode operation (SSB, CW, AM, FM, AFSK, Packet* 1200/9600bps), 100kHz-970MHz receiver (cellular locked-out), and options for additional AM and CW IF filters.

The FT-100 is supplied with an MH-42B6JS hand mic, DC power lead and comprehensive instructions.
D 3285

YSK-100 remote front panel kit.
D 3286

YAESU

Included as standard:

- Digital Signal Processing on both transmit and receive
- Effective IF noise blanker
- Electronic CW keyer with 50 character message memory
- Spectrum Scope function
- Massive receiver coverage (100kHz – 970MHz, less cellular)

$1998 **SAVE $348**

2 YEAR WARRANTY

All prices shown are inclusive of GST. Limited stocks. Some units may be ex-demo models with minor marks, but full warranty applies.

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That's where you go!

** Requires third party TNC*
Offers expire 31/12/2000.

1890 IBC 4 col.

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